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THE Country GUIDE

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New Staff Member



Lillian Vigrass

LILLIAN VIGRASS, graduate 1950 in Household Science, University of Saskatchewan, has joined the editorial staff of The Country Guide. Miss Vigrass was born on a Saskatchewan farm. She received her early education at Pathlow, later taking normal school training at Moose Jaw. She taught school for four years, before entering university. For two summers she did survey work on Level of Living studies with the Economics Division, Marketing Service of the Dominion Department of Agriculture. Miss Vigrass has been writing and working as temporary staff member of The Country Guide since May, 1949.

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Editors: P. M. ABEL and H. S. FRY

Home Editor: AMY J. ROE

Associate Editors: RALPH HEDLIN and LILLIAN VIGRASS

Advertising Manager: K. D. EWART

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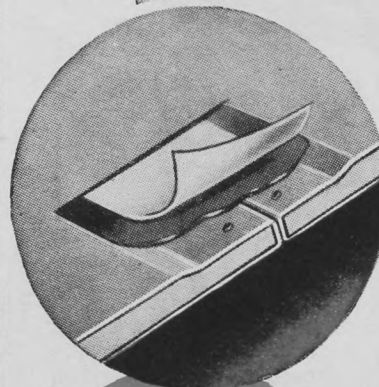
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Under the Peace Tower

PERHAPS the most interesting people we have in the Canadian capital are the Iron Curtain diplomats. Many people forget that the plenipotentiaries from Russia, Poland and Czechoslovakia live in Ottawa. As a newspaperman covering political and diplomatic Ottawa, I suppose I see as much of them as most people do. I am often asked:

"What are these so-and-so's really like?"

My answer is that they are not so-and-so's, and they are pretty much like other people.

The Union of Socialist Soviet Republics, to give them their full title, live in a big house on Charlotte Street, overlooking the river. It is the same home from which the fabulous Gouzenko is supposed to have escaped back in 1945, which provoked the atomic spy trials of '46.

The present head of the mission is Mighail Degtiar. Since Canada and Russia are officially mad at each other, we do not exchange diplomats, but charge d'affaires, who have only a limited prestige and a limited responsibility. We Canadians match this by having only a charge at Moscow. Thus do the two biggest countries in the world slap each other's wrists.

Comrade Degtiar is a blond, blue-eyed man with pink cheeks, and a merry laugh. He has a good sense of humor. He likes people and he likes life. But, like every other diplomat, on this side of the Iron Curtain or the other side of it, he plays it very safe.

Nobody entertains like the Russians. When they have one of their big national days, they invite a big list of guests. They put floodlights on the roof, to illuminate the hammer and sickle fluttering in the night breeze.

The guests arrive by the hundreds. Of all the foreign powers, they are the only ones who insist that you wear a "black tie" when you go, which means, naturally, the formal attire which demands a dinner jacket, formal shirt, and so on. The people's government is just as formal as the government of the czars, after dark.

The reception line is inside to the right, in what we used to call the front parlor. There is a super-special buffet there, with a special variety of vodka, as well as super-duper qualities of caviar, in two colors, for the Very Important Persons. Last winter, for instance, when Prime Minister Louis St. Laurent arrived, as he is obliged to do, he and Charge d'Affaires Degtiar drank a formal toast, under Stalin's picture, while the photographers had a field day.

MR. DEGTIAR is a man of discernment and culture. He likes people, as do all Russians. But he is scared of a good many Canadians, and thus with most guests he never gets beyond commonplaces in conversation.

The best way to get along with him is just to be yourself, converse about Ottawa's local city problems, discuss the weather, and generally talk as you would to a man over the back fence.

His first attache is V. P. Bourdine, as dark as Degtiar is fair. He has a good knock-about knowledge of English, likes a wisecrack, appreciates a



Scotch and soda, and enjoys people. He too draws a line of reserve with strangers, but is lots of fun at a cocktail party.

THE Poles recently sent their minister, Eugeniusz Millnikiel, home. That was to remind Canada they were sore at her for failing to turn over the Polish treasure. (Canada really hasn't got it; Premier Duplessis of Quebec has it!) Millnikiel was a rather pop-eyed, fair-haired man who seemed mostly a trifle absent-minded, like a man walking in his sleep. But when he came out of it, he was kind and friendly. I always felt he liked it better in Iran, where he had been, than he did in Canada. He was very attached to his dog.

The new Polish plenipotentiary (meaning he's the No. 1) is Eugeniusz Markowski. A true Pole, he is a handsome young man who speaks several languages, but not English. Up till now, he and I have to carry on in French. If any of you can recall how much your high school French did for you, you can imagine how I flounder along in the Gallic tongue. But he's fresh from Rome, he is a cultured personality, and you find it hard to realize that this polished and handsome young man is an Iron Curtain adherent.

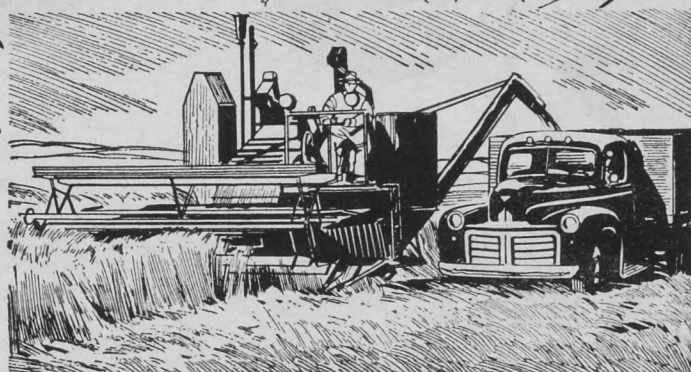
The Czechoslovak charge is Zdenek Roskot. He is a young man with light-colored hair, rather handsome, and dressing in the modern manner. He could stand at Portage and Main and be taken for a well-groomed young Winnipegger. It is not easy to realize he is a die-hard apostle of Klement Gottwald.

He too, has social graces, and is easy to get along with. I was talking to him at the Pakistan garden party, the time Prime Minister Liaquat Mohamet Ali was here. He told me a joke in German. But since my high school German is not as good as my high school French, the point of it got away from me: He was with the Russian and the Pole, in a little knot of

(Please turn to page 17)

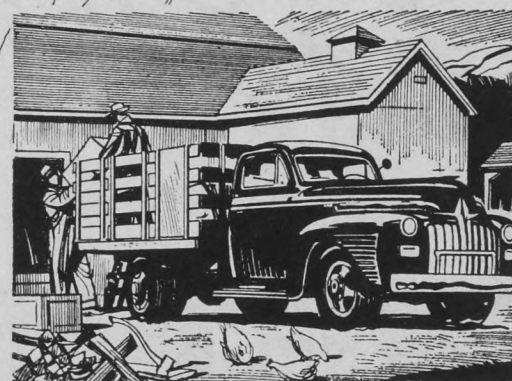


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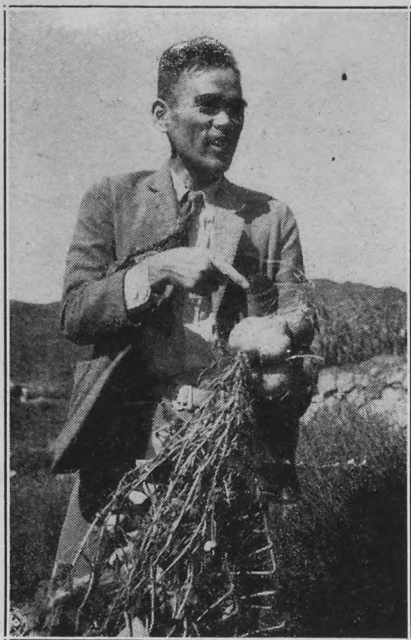
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A Japanese ag scientist displays sweet potatoes affected by the Bikini atom blast.

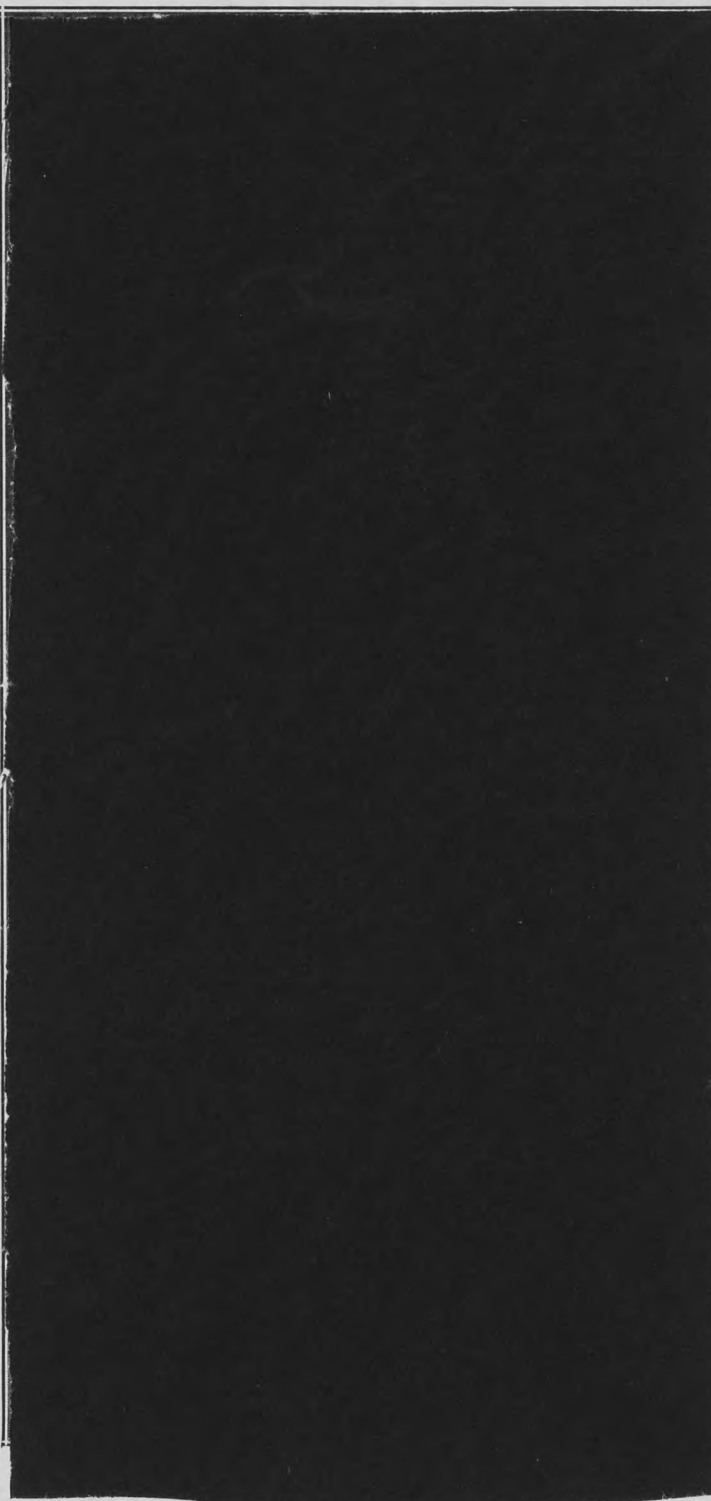
A-BOMBS CAN Strike You

IF an A-bomb landed near your house, what would you do? If the new, modern weapons of atomic and bacteriological warfare, guided missiles and projectiles with supersonic speed were to be unleashed tomorrow on our Canadian homes and factories, just where would you go? What would you do? We must all realize that the possibilities, although not imminent, are certainly not remote. You may not be making any preparations for your personal safety but your neighbors and governmental institutions are formulating the basic plans of defence against modern weapons of war.

On July 5, the Minister of National Defence announced that Canada was training military and civil defence personnel in protective measures against atomic warfare. Many of us have been startled by the statement for it brings the possibilities of war and its ravages right to our doorsteps. The over-all plan is being drawn up under the direction of the Co-ordinator of Civil Defence, Maj.-Gen. F. F. Worthington. The plan embodies groups of trained personnel at the federal, provincial and municipal levels. These groups will form the nucleus of controlling organizations. They will direct our protective measures in planning areas which might be suitable targets for attack and in making them less attractive as targets. They will ensure that warning systems are set up to give notice of raids coming in. They will organize supplies which would be required in times of mass catastrophies and will instruct us generally on personal protection.

THE cost of atomic bombs limits their use to targets which are most valuable in overcoming an enemy. In a third world war it is not likely that any invading force could conquer and hold very substantial areas without ground troops and implements of war such as those which were used in World War II. Prior to the last war, the Italian officer Douhet advanced a revolutionary theory which postulated that future wars would be fought by large armadas of heavy bombing planes. He suggested that sufficient bomber might possessed by any one country would obviate any need for strong ground forces or strength on the seas. Many students of warfare followed Douhet's reasoning until the course of events in World War II showed up its folly.

The greatest advantages of atomic bombing would probably be obtained in crippling industry, transportation and the morale of the populace. The success which an enemy obtains in the latter objective depends on each individual in the country attacked. The bombs dropped on Hiroshima and Nagasaki were hailed as forces against which no



by R. G. MARTIN

The people of Canada must prepare to defend themselves against the modern agents of war

country could stand. Certainly they hastened the surrender of the Japanese empire. Probably, in the over-all picture, they actually saved many lives which would have been lost in the normal conquering of the enemy. The two atomic bombs were not actually as crippling to either manpower or materials as were the huge fires which resulted from the incendiary raids. Psychologically, they were decisive.



A member of the research group on Bikini testing foliage for atomic reaction.

One A-bomb has an explosive equivalent of 30,000 tons of TNT. It cannot be broken down into a number of smaller bombs because of its physical make-up. The blast is not as sharp as that from conventional high explosives. It will "push" rather than "punch" since the wave of pressure moves more slowly and lasts slightly longer. The blast is accompanied by toxic effects of radiation and by burning which may be caused both directly by heat from the bomb and by secondary effects of the blast.

In the words of the experts, an atomic explosion occurs when fissionable material of greater than critical mass is bombarded by neutrons. This phenomenon can be compared to the chain reaction which is set up when a lighted match is thrown into a tub full of firecrackers. The first firecrackers to explode produce additional flame and heat which quickly ignites the fuses of the firecrackers which surround it. The speed of the reaction will be dependant upon the density of the exploding units or on how closely they are packed together. If several tubs contain a few firecrackers each, it is possible that no chain reactions would be produced by lighting one fuse per tub. However, if the contents of them all were poured into one tub, the chain reaction would be violent.

IN the atomic bomb, the atoms of Uranium 235 act like firecrackers. The igniting agents are neutrons which are always present in the atmosphere. If the bulk of fissionable U235 is small enough, only individual explosions will occur; each gives off from one to three free neutrons. Now, if several small masses of U235 are suddenly brought together to form one large mass, the chain reaction is set up and phenomenal amounts of heat are produced. In addition, burning rays are given off by each atom as it breaks up and radioactivity is induced in some outside materials.

When the bomb explodes there is an immediate blinding flash of light and heat. This is followed by a ball of fire which expands and rises at the rate of about 90 feet per second. The temperature in the center of the ball is estimated to exceed 20,000,000 degrees Centigrade which is the estimated temperature of the interior of the sun. At the end of one minute the ball has lost its brilliance and becomes a large cloud of smoke at a height of one mile. In the meantime a wave of blast, heat and radiation spreads out from the epicenter to a radius of about 15 miles.

Explosions at ground or water level differ in character from air bursts. In Japan, the bursts occurred at from 1,700 to 2,000 feet above the ground. This height produces a maximum of blast damage. In this case, (Please turn to page 26)

BREEDING BUGS THAT EAT BUGS

by P. M. ABEL

There used to be a popular jingle that ran

*Big fleas have little fleas
Upon their backs to bite 'em.
The little ones have lesser ones,
And so ad infinitum.*

THAT's an understatement. The little bugs the rhyme do more than bite 'em. Consider the case of the unhappy grasshopper. He may have any one of 20 different "bugs" in the form of a grub gnawing at his insides. If enough grasshoppers in the same vicinity are in the same fix, the farmer who may have lost his crop from a grasshopper infestation the year before, finds that the 'hoppers have miraculously passed along, he knows not how or where. Every grasshopper goes about in mortal fear of his life. Lurking behind any blade of grass may be the enemy who will stab him cruelly in the back, leaving behind an egg which, after hatching inside his host's carcass, will veritably eat him alive, from inside out. Or perhaps from some stagnant pool near his feeding grounds may come some germ or fungus as fatal to him as yellow jack is to the human.

Scientists have been aware for some time that many, perhaps most, insects have deadly insect enemies, but they did not put their knowledge to practical use much before the beginning of the century. The first insect parasite brought into Canada for liberation came here in cotton sacks from England in 1912. About the same time the idea began to take on in Great Britain and in the United States.

THE story of how the Woolly aphis in British Columbia fell before his enemy, who masquerades under the forbidding name of Aphelinus mali, records one of the first successful efforts in controlling insects by the use of parasites. Woolly aphis had long been known in eastern Canada. But he operates on a modest scale there because of his voracious enemy with the outlandish name. When fruit farmers took apple trees out to the Pacific coast, they carelessly took some specimens with Woolly aphis on them, but neglected to take along the parasite which kept them down in the East.

From 1892 onwards, B.C. farmers began to complain about the spread of the Woolly aphis. By 1915 one trained observer in the Fraser Valley complained that apple trees were so white with the pest in September that they appeared to be covered with snow. By the time the first war was over, however, entomologists knew the answer. Batches of the parasites were sent to Vancouver beginning in 1921. They flourished and spread. Since 1930 there have been no outbreaks of the pests. Its enemy now exercises his veto effectively.

This and other successful ventures of the same kind induced the federal government in 1929 to acquire a commodious old residence at Belleville, Ontario, and convert it by successive stages stretching over several years into a laboratory which is the focal point for collecting, multiplying, studying and distributing parasites for insect control.



Spruce bud worm collected in British Columbia being put into rearing trays at Belleville.

It wasn't established without some misgivings. There were people who objected to the importation of new insects on the ground that we had enough already. But those people got their answer in the elaborate precautions which have made the place a near insect-proof as ingenuity can devise. Hermetically sealed windows, filtered ventilation, and in some places walls of glass brick, play their part. It would be as easy for a landlubber to take a dive down into a submarine as for a visitor to take an uncontrolled draft of air, containing perchance a pest insect, through the double doors at Belleville. An insect could say truly to a human jailbird that, relatively speaking, Alcatraz is a roadside free lunch.

From small beginnings the parasite insect lab has grown till it now employs 25 trained scientists, 75 skilled technicians, and is the center from which numerous field parties operate in various parts of Canada and abroad.

ALMOST the first question every visitor asks the youthful Dr. Alfred Wilkes, who presides over this unique institution, has something to do with the practical achievements attained. If the enquirer is a British Columbian he will get the story of the spruce budworm, or the Pea moth. If he lives between the Rockies and the Red he may be told about the forest borers or he will get the inconclusive, but nevertheless interesting story of the Wheat stem sawfly. An easterner will be told what is being done to save his forests from an enemy which out-rips fire and axe in its capacity for damage. Even foreign visitors will find something for which to thank Dr. Wilkes and his staff, for nowhere in the realm of science is there closer collaboration in the interchange of information, and gifts of insect parasites to wage war on pests abroad. The sawfly parasite, trying to gain a toehold on the dry plains of Alberta, the Current came from Farnham, England; the grasshopper parasites that lie along the road to recovery, came from Brazil and the Pampas; today, in Scandinavia, George Wishart, a Belleville scout, is attempting to track down a parasite which may be instrumental in defeating the root maggot surge.

Co-operation is a two-way street. Insects have been shipped out of this country as fast as they have been shipped in. Regard the tale of the "bug" which saddens the life of the Colorado Potato beetle. Europeans had never known the dirty pink bug which defoliates our spuds till recent times. They made their first appearance in France just before the commencement of World War II. Elsewhere in western Europe they were a tribulation which came in at the same time as the Nazis. In eastern Europe they came so recently and so suddenly that Uncle Joe can get his people to believe that the "wicked" Americans dropped them from planes.

When the potato beetle first startled French farmers, Belleville immediately sent parasites, but this good work had to be stopped when the shooting started, to be resumed when the boys came home.

"How come?" you ask Dr. Wilkes. "We've got plenty of potato bugs of our own, and yet we never hear of them being wiped out by parasites."

Here is the answer. We have some very active parasites that prey on the potato beetle. If you examine the late crop of grubs feeding on the leaves,



Collecting Spruce bud worm parasites in British Columbia.

(Please turn to page 40)

SANTA CLAUS broke all his own records for open-handedness on August 7 of this year. In the person of Jean Fontaine, he formally dropped \$3,500 worth of presents into the lap of one farm family at Morinville, Alberta.

Now Jean Fontaine is no professional Santa Claus. Among his French-speaking acquaintances he signs himself "agronome." The nearest English translation is the clumsy title "district representative." Fontaine doesn't even look like Santa Claus, although 40 years more will give him the right figure. And the presents were not made in any mythical Arctic workshop, but were begged by Fontaine from merchants in Edmonton and Morinville who supported him handsomely to put his plan and his message across in a novel and dramatic way.

Let's begin the story at the proper beginning.

IN 1946 the Alberta legislature enacted a measure enabling each rural municipal council to appoint an agricultural advisory board to study questions of agricultural policy within the area and make recommendations to its parent council, and the Act put wide powers into the hands of the councils to enable them to carry out such recommendations as might be made. Each advisory board is composed of two councillors who are farmers, two non-farmer councillors, and the local representative of the department of agriculture, in this case, Jean Fontaine.

If the advisory board reports to the council that John Doe is growing weeds which will pollute the countryside, or that Richard Roe is following cultural practices that will encourage his soil to drift, the council, on the board's recommendation may order these farmers to take steps to end the common menace. If Doe or Roe fail to carry out the instructions, the municipal council may virtually take over their farms. Actually councils do not dispossess a farmer. He is allowed to live in his own house. But the council usually contracts with some other farmer to do the work which is considered necessary, and payment for that work becomes a first charge on the ensuing crop, taking legal precedence over a first mortgage.

Altogether 26 municipalities have formed advisory boards, and in the aggregate many farmers have been helped, through their agency, to adopt better farming practices. At Morinville the municipal fathers have taken a hand in straightening out operators on 13 farms. Some of these men have already graduated from tutelage. They have regained complete control of their own affairs, and in at least one case have nothing but praise for the lessons they learned while under direction.

For some time it has been apparent to his neighbors that Felix Meunier would come under the critical eye of the board. Quack grass and thistles were getting too abundant on his fields. There was neither chick nor pig on his place and his cow was no Johanna Abbekirk DeKol. To say the least, his place needed a face lift. The excellent buildings erected by his father

had not had a coat of paint for 30 years. And there were six mouths to feed from the small but creditable garden in which Mrs. Meunier takes justifiable pride.

The Meunier farm, practically all in cultivation, comprises nearly a half section of fine, black Edmonton loam. It has had a good crop record in the past 50 years. Felix Meunier's father was as good a farmer as ever came out of old Quebec, and enjoyed the high esteem of the whole neighborhood. The farm buildings, dating back 45 years, must have been as good as any in the locality at the time when they were built.

But Felix has not had as good "luck" as his industrious father. He told me of his '42 crop which was hailed out 100 per cent, and of the atrocious '43 threshing season which was not completed till the next spring. And certainly six small mouths take a lot of feeding. Whatever the contributory causes were, Felix steadily went behind, and the advisory board cocked its wary eye in his direction.

About this time Agronome Fontaine began to speculate why some farmers throw up the sponge and move to town, in many cases with no better outlook than to join the army of unskilled laborers. Why should he, Agronome Fontaine, spend his days trying to prevent soil erosion, when a far more damaging process of erosion was going on, the erosion of the human resources of rural Canada? He reckoned that if farmers could surround themselves with the ordinary comforts of city life they could regain contentment and hope. In the end he persuaded himself that if, by some dramatic stroke, one farmer living on the borders of necessity could be heartened to make a renewed effort under expert guidance, the attention of the whole community could be focused, if only for a brief moment, on the agricultural practices which underlie successful and permanent farming.

FONTAINE eventually persuaded the agricultural advisory board at Morinville that he could drive home the lesson of sound farming procedure if he could have a field day on some derelict farm which could be transformed within a few hours into a place where any farm family would be proud to live. Like the street corner vendor, he could sell his wares if (Please turn to page 52)



Kitchen transformation. Moving the stove to west wall gets rid of the overhead pipe. Its place is taken by a modern sink. Chrome furniture gives brightness; a floor covering, cleanliness with less work.

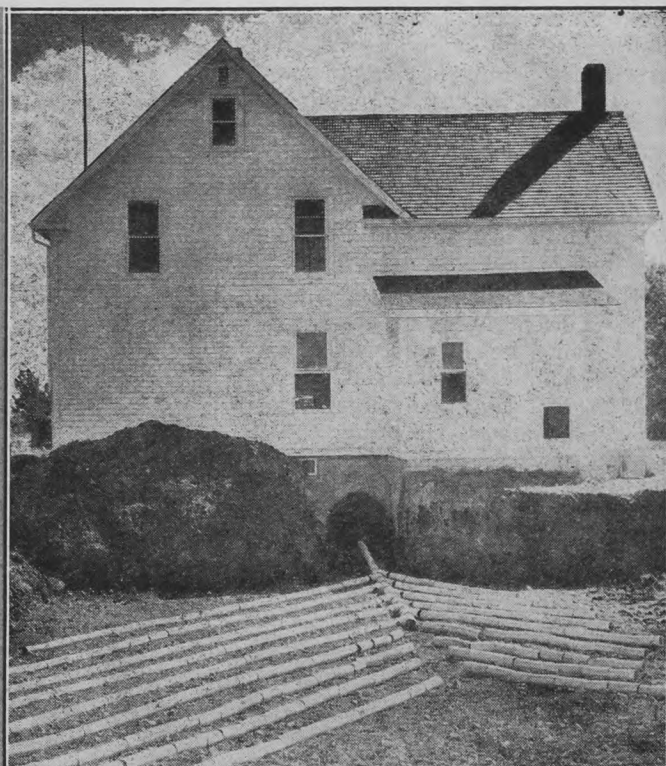
Summertime Santa Claus



The two lower pictures show what the magic wand of Jean Fontaine did to the farm residence. Left, the 45-year-old house which had not been painted since 1920. Right, two coats of paint use up part of the 137 gallons required to give the buildings an exterior face lift. In the foreground of the right hand picture, taken from the rear, may be seen the ribs of the sewage disposal system in place, but left uncovered for spectators to see. Such a system may go five years without removing sludge from the tank, but annual inspection is advisable.

Through the generosity of merchants and tradesmen the farm and buildings of Felix Meunier at Morinville were transformed from a run-down property to a modernized home, and a field day brought visitors from far and near to admire

by
PETER MACDONALD



H. S. FRY tells what happens



Members of the Alfalfa Conference get out on the alfalfa plots at the Experimental Station, Lethbridge.

EARLY last month at Lethbridge, in the new farm science center which is being developed there, a group of men from Canada and the United States met for three days in the Science Service Laboratories (which were opened a year ago), to talk about alfalfa. They had met on several previous occasions, but always somewhere in the United States. Their meeting is known as the Alfalfa Improvement Conference.

Aside from a few listeners-in, these men were all experts. An expert is an individual who possesses some special skill or knowledge in a particular subject, gained as a result of either study or experience, or both. Experts come in infinite variety, but at Lethbridge all of those gathered together were concerned with the alfalfa crop and the several branches of science involved in its improvement. There were, for example, agronomists, whose field is the field culture of the crop; geneticists, or plant breeders, who produce new varieties or improve old ones; pathologists, whose concern is diseases; entomologists, who study insect pests; and apiculturists, whose special interest is beekeeping. If the list were complete, it would also include botanists, who are interested in plants, as such, their classification and their economic and geographical distribution and utility; soil scientists, whose field is the classification, structure and fertility of soils; and bacteriologists, whose study is the invisible world in which billions of microscopic bodies work above and under the soil, both beneficially and injuriously to man and to the plants and animals under his care.

Experts from nearly all these fields of science were at Lethbridge. They came from as far south as Arizona and California, and as far east as Maryland and Virginia, in the United States. They also represented the three prairie provinces and Ottawa, in Canada.

Many persons might wonder, perhaps, why so many specialists and experts were necessary to talk about a single crop which it is impossible to grow satisfactorily over a very large part of this area. In one sense, that is exactly the reason why it was important to get together about it. In the long view, science recognizes few obstacles as insurmountable. If there is a real need for some new variety, or chemical, science sooner or later is able

to produce it. Indeed, as this story will briefly indicate, there is a strong possibility that within five years, plant scientists will have produced an alfalfa which will withstand our winters and, under reasonably satisfactory soil conditions, will be as persistent as the perennial sow thistle or Canada thistle. Aside from this present limitation, however, there are very large areas in the northern portions of the prairie provinces and, of course, a great many parts of British Columbia, where the alfalfa plant now does well, and where it is used extensively either for hay, pasture or seed production.

IT is believed that alfalfa originated in the hot, dry regions east of the Mediterranean Sea. The crop, variously called lucerne, purple medick, Chilean clover, and alfalfa, is known to have been cultivated for nearly 2,500 years. It was introduced to other parts of Europe by the Romans and probably reached South America with the Spaniards; thence to the southern part of the United States via Mexico, and to the eastern United States via Chile. Its great area of cultivation in the United



The Conference Executive: (Left to right): Dr. O. S. Aamodt, USDA, Beltsville, Md.; A. E. Palmer, Lethbridge Station; Dr. J. M. Stevenson, Ottawa; and Dr. C. P. Wilsie, Ames, Ia.

Science gathers at Lethbridge to pool U.S. and Canadian knowledge of alfalfa problems

WHEN

Experts Get Together

States has been the western states, where it was introduced during the California gold rush about 1850.

Today most of the world acreage of alfalfa is located in the western hemisphere. A few years ago it was estimated that approximately 90 per cent of the total acreage in the world (about 45 million acres) was more or less evenly divided between the United States and Argentina. As a deep-rooted, perennial legume, which is at the same time very palatable to livestock, alfalfa is perhaps the most important forage crop for hay or pasture available anywhere. Because of its deep-rooting habit and its consequent ability to tap the subsoil moisture, it does well in arid or semi-arid climates, provided the soil has a sufficiency of essential minerals, such as calcium, phosphorus and potassium. Winter-killing is a characteristic difficulty. Last winter in certain locations, practically all standard varieties of alfalfa killed out in wind-swept areas. In eastern Canadian alfalfa-growing districts, a characteristic trouble is heaving during the alternate freezing and thawing of early spring. By this process the tap roots are broken and the crown may be heaved up as much as four inches from the surface of the soil.

Alfalfa improvement is attended by many problems. At the Lethbridge conference, Dr. O. S. Aamodt, Division of Forage Crops and Diseases, Bureau of Plant Industry Station, USDA, Beltsville, Maryland, outlined the objectives of alfalfa improvement. Basic to all questions of improvement, however, are these factors:

From 600 to 700 pounds of water is required to produce one pound of dry matter in alfalfa, whereas most grasses require only from 400 to 500 pounds of water per pound of dry matter. While alfalfa probably possesses some drought resistance, it cannot be classed as a drought-resistant plant, even if some individual plants do possess the ability to survive; and, whereas 25 years ago nearly all alfalfa grown in the United States and Canada, except for seed, was produced in pure stands of this crop, today about 85 per cent of the alfalfa grown for hay or pasture is grown in grass mixtures, notably brome grass and alfalfa in northern areas.

In connection with this latter fact we are confronted with an amazing example of nature's secret methods. This is revealed by the fact that brome grass and alfalfa, for example, when grown together in a mixture, will produce substantially more forage than if either one of them is grown in a pure stand. The reason, in all probability, is associated with the fact that grasses are mostly shallow-rooted and thoroughly explore the moisture and nutrient reserves of the upper layers of the soil, whereas alfalfa, being deep-rooted, is able to tap the subsoil

moisture and to gather nutrients from the lower soil layers. The combination is unbeatable.

As Dr. Aamodt outlined the objectives, they make a formidable list. They include the production of alfalfa varieties and selections resistant to disease; types that are winter hardy; kinds that will be heavy yielding, not (Please turn to page 46)

To produce a new licensed variety in Canada requires co-operation between many institutions and takes about twelve years

MOST of the people who farm the lands of western Canada have no idea of the extent to which they are dependent on the men who spend their days in laboratories and in studying test plots. If a farmer had to make a living out of growing the grains that developed naturally he would find that he could make a very poor living out of it. The development of plants in the natural state is not calculated to make them yield a large amount of grain to the acre; nor is it designed to lead to the production of a large number of loaves of bread to a bushel of wheat. The vast improvement that has been made in cereal grains has largely resulted from the conscientious work of an army of scientists.

It is often useful to have a look at some of the other fellow's problems, and to see what he is trying to do. In this article it is proposed to examine some of the problems that have faced our farm scientists from time to time, to note how they try to resolve them, and to look at some of the successes that have attended their efforts.

In Canada, organized barley breeding work is centered on the Dominion Experimental Farms, in the plant science departments of the Colleges of Agriculture of the Universities (Provincial) and in a few federal institutions such as the Dominion Laboratory of Cereal Breeding and the Dominion Laboratory of Plant Pathology, both located in Winnipeg. This is not intended to minimize the efforts of men such as Dr. Seager Wheeler, who have done invaluable work without the benefit of government financial assistance. Nevertheless, the history of cereal breeding shows that the vast majority of the advances have been achieved in a laboratory organized for the exclusive purpose of plant breeding and research. Isolated individuals working alone in the field have occasionally made valuable contributions, but it is small compared with that of the men who have been able to devote all of their efforts to research.

AT the present time 36 varieties of barley are authorized under the Seeds Act, for sale in Canada. Of these, 10 are old varieties which were being grown prior to 1923, but only six of them are in common use today. It is interesting to note that two of these six varieties are the very well known O.A.C. 21 and Hannchen. Between 1923 and 1934 nine varieties were licensed, seven of which were imports from the United States and two were Canadian varieties of hybrid origin.

Sixteen of the 36 varieties now licensed have been developed since 1934. Twelve of the 16 were of hybrid origin and were developed by our Canadian plant breeders, two were selections made in Canada of old sorts, one was imported from the United States, and one was imported from Europe.

The year 1934 is important in the history of barley breeding, because in that year the Cereal Division at Ottawa arranged for the co-operative testing of varieties between the universities and the experimental farms. Two years later this co-operative testing was placed under the National Barley Committee; and a sub-committee on breeding and production took over the responsibility of reviewing the data and recommending what varieties should be tested.

The reason for the formation of this sub-committee was to co-ordinate the work under way across the country, and to ensure that information was being provided to all breeders so that they would be informed on all work that was being done. It was also important to test hybrids which might shortly be coming up for licensing under as diverse circumstances as possible. A University of Sas-

RALPH HEDLIN
tells of



BREEDING BETTER BARLEY

The field at the right is elite stock of vantage barley at the Brandon Experimental Farm. At left; Bill Hanec, standing, and Baldur Stefansson inoculating plants with smut spores.

katchewan development, for example, could, through this procedure, be tested at several points across the country. Since this arrangement was set up, three new varieties have been produced at the University of Alberta, two each at the University of Saskatchewan, the Ontario Agricultural College, Macdonald College, Quebec, and the Brandon Experimental Farm, and one at the Experimental Station at Swift Current. Needless to say, large amounts of material are under test at breeding stations, and further new varieties will undoubtedly be licensed.

In recent years there has been further organization in Manitoba and eastern Saskatchewan. In this area a joint project on breeding disease-resistant barleys has been set up. The institutions that are a party to this organization are the Dominion Experimental Farms at Brandon, Morden, Indian Head and Melfort, the Dominion Laboratory of Cereal Breeding and the Dominion Laboratory of Plant Pathology in Winnipeg, and the Grain Research Laboratory of the Board of Grain Commissioners.

The project leader is W. H. Johnston, who is in

charge of barley breeding work at the Brandon Experimental Farm. Members of the project are R. F. Peterson and J. E. Andrews of the Laboratory of Cereal Breeding; T. Johnson and W. Cherewick of the Laboratory of Plant Pathology; D. R. Metcalfe, Brandon; H. R. Ballantyne, Melfort; W. J. Breakey, Morden; J. G. Davidson, Indian Head; W. O. S. Meredith, Grain Research Laboratory, Board of Grain Commissioners, and T. J. Harrison of the Barley Improvement Institute, Winnipeg.

THE stated objective of this joint project should be of great interest and importance to western Canadian farmers. It is "the production of varieties satisfactory for feed and malting, with resistance to stem rust, leaf rust, loose smut, false loose smut, covered smut, ergot and any other disease that may assume importance, and having the capacity to produce high yields of grain that will grade well for the purpose intended, and having strong straw, non-shattering spikes and other characteristics necessary to meet current farming practice." In the attempt to achieve this objective there is a co-ordinated investigation by plant breeders, plant pathologists and cereal chemists and any others designated by the project members, in order to gain and give information that will enable the realization of the objectives of the project through breeding programs, and to allow such breeding programs to be carried to a conclusion.

As indicated above, W. H. Johnston of the Brandon Experimental Farm is project leader. He plays an extremely important part in the success of this barley breeding project. He gives leadership to the group by keeping members informed on work that is proceeding within the group; by drawing to the attention of members important developments in other projects or areas; by keeping the objective of the project before the group at all times; by constantly evaluating immediate problems, and shifting emphasis as it may be necessary; and by advising and assisting where problems arise. He also acts as chairman at the project meetings and as a co-ordinator and liaison officer between members of the group and others

(Please turn to page 32)

[Photo by Dr. S. B. Helgason]



In the University of Manitoba field plots, J. E. Campbell studies visual characters of barley which may be related to yield.



WHITDOM had its beginning back in the old days when Whitetail was a spotted fawn, and when he curled under a myrtle thicket in Timberdrift, the big Georgia swamp, to await the coming of his mother at dawn and at dusk. It was here he first heard the hounds pass as they missed his bed by a bare twenty paces. Yet he lay quite still, his brown, velvet eyes wide with fright, his body motionless. Even then he realized that motion meant revelation, and these were his enemies.

Dogs and men. It was they that he must fear. For more than a hundred years no wolf had ranged the swamp country; fifty years since the last cougar had been destroyed. For the passing of these wild enemies Whitetail had man to thank, but man did it because the flesh eaters were competitors, destroying game he desired for his own skillet. In return, man himself hunted with a new ruthlessness, and the seed of caution, whose fruit is survival, was transmitted from generation to generation until at last it must be a good hound that could bring Whitetail before the guns.

He grew rapidly back in those early days, until he was larger than a sizable calf and the spots disappeared from his coat. Many times he went with his mother to a certain grain field planted deep in the swamp. This was surrounded by a wire fence too high for his young muscles to clear but his mother would vault it easily, eat her fill and return to him outside the enclosure.

Whitetail would run close to the fence and stand on his hind feet, his sharp front hoofs resting against the wire. There he would wait without a sound, for of all the animals in the big swamp the deer was perhaps the most silent. Each time he made a great show of jumping the barrier but he was well along in growth before he did finally summon courage to make the attempt.

And then it proved well-nigh disastrous.

A FULL moon shone down. The grain had been cropped close by the visiting deer, but strangely enough dried hay was scattered over the enclosure from time to time, and this the deer would eat avidly. On this night Whitetail, following his mother, quickened his pace until he was running with his muzzle just behind her flank. When she lifted her body lightly, he followed her.

In midair he saw his mother jerk suddenly and sprawl sideways. His own hoofs struck her near the rump and he tumbled to the earth. From his mother came a wild cry of pain, charged with agony and terror. He scrambled up, shaken but unhurt. There above him, her feet just off the ground, was the body of the doe, spitted on two sharpened stakes set at an angle toward the fence.

He would stop motionless, searching for any hint of danger

Again and again came the pitiful bleat of the wounded creature, impaled and left to struggle and suffer in the crude but efficient death trap of man's devising. Every movement of her body drove the torturing shafts deeper into her vitals.

Of course Whitetail did not understand what had happened. He went close to his mother and licked her face. He looked into the agonized eyes but they told him nothing for she was as ignorant as he of the cause of her tragic plight. Whitetail walked stiffly around and called to her in a low, plaintive tone. She did not answer. The only sound that he received in reply was her wail of pain that came at longer and longer intervals, each time growing weaker.

Finally she ceased to struggle. Whitetail nosed his way around the enclosure. Everywhere it was

she was dead. At any rate this was the beginning of his panic. He ran around the encircling wire in a frenzied effort to escape.

He could not retreat as he had come, for his mother's body effectually blocked any chance to clear the fence at this point. It was the only place he had seen other deer come into the field, for it is their custom to jump such a barrier at just one point, and his mind was capable of nothing beyond an escape where he had entered.

THE buck seemed equally ill at ease and slowly circled the field as Whitetail had done, seeking some other outlet. Whitetail heard the breaking of sticks and the footsteps of men before he saw the light that blinked through the swamp. His nose brought him the dreaded scent when his enemies were a full two hundred yards away and this added to his panic. The buck had heard and smelled the intruders even before Whitetail. As the men stopped at the rude gate, and fumbled with its latch, the buck leaped the fence at the far side, away from the men. The fawn stood in indecision.

The two men spied him at the time they saw the body of the doe. Almost before he knew what was happening a rope was around his neck. He did not struggle but submitted tamely, with a great fear in his heart, to the will of his captors. The body of the grown deer was taken from the two pointed stakes which were then reset. Later the men led Whitetail out of the swamp and to the hills.

That night he was put in a stall and the door was closed. Of all the wild animals the deer is ordinarily among the easiest to tame but Whitetail had about him something that was essentially different. The horse-and-cattle smell of the stall was hateful to him. He whimpered for his mother and for the dark, damp avenues of the swamp. After a time he put his paws against the door as he had put them against the wire. Then (Please turn to page 53)

MONARCH OF TIMBERDRIFT

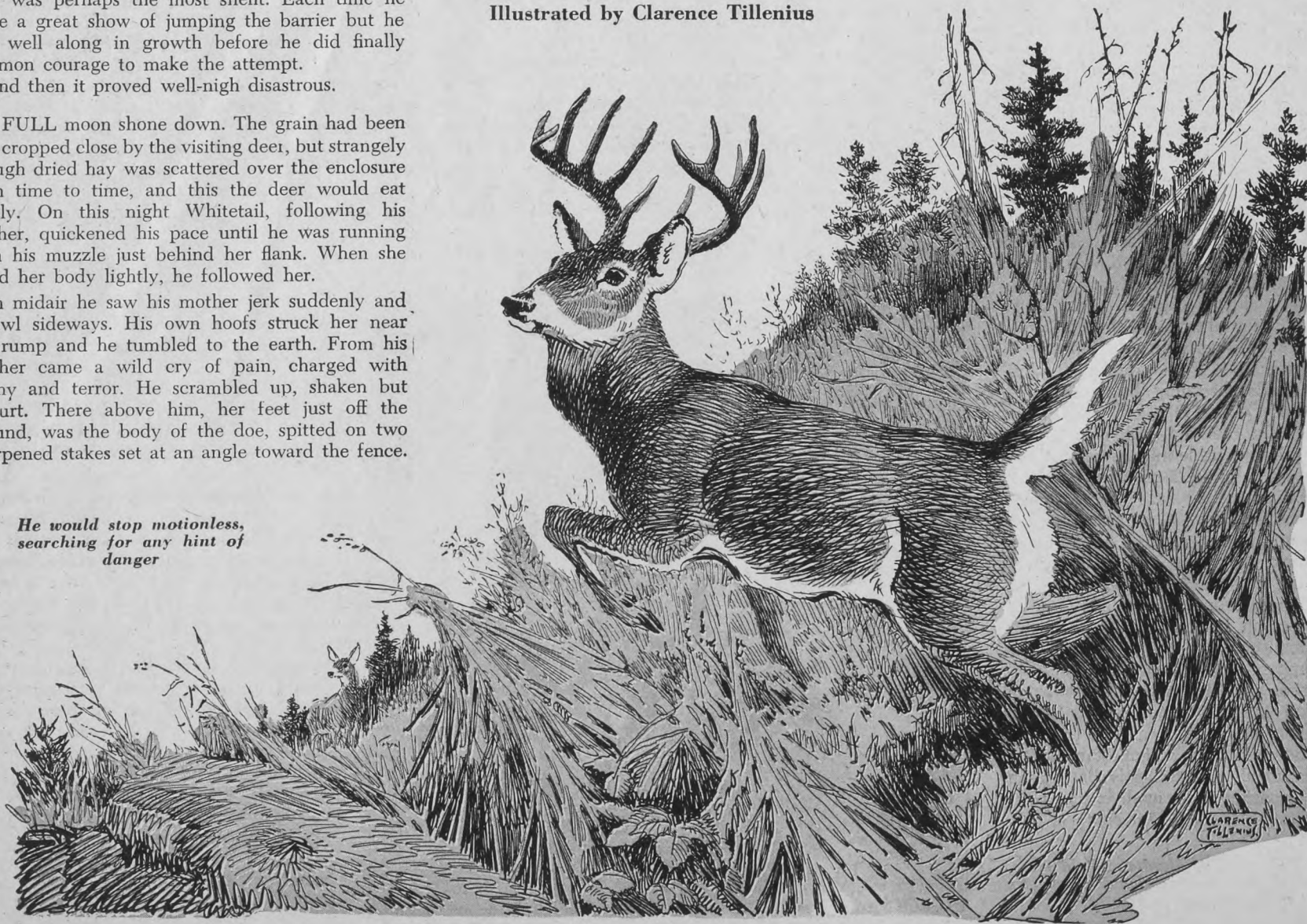
Whitetail carried with him the unforgettable impression of the death of his mother, the smell of a dog or a man and became a wise and wary buck, respected by his kind and admired by man.

by ELMER RANSOM

guarded by the wire. His ears caught the soft tread of a deer moving through the swamp. He turned his head and saw a buck clear the fence as light as thistledown. The animal's hoofs struck his mother's body and the deer fell to one side as Whitetail had fallen. There was no sound from his mother. Perhaps it was then Whitetail realized that

the easiest to tame but Whitetail had about him something that was essentially different. The horse-and-cattle smell of the stall was hateful to him. He whimpered for his mother and for the dark, damp avenues of the swamp. After a time he put his paws against the door as he had put them against the wire. Then (Please turn to page 53)

Illustrated by Clarence Tillenius





Tom crawled stealthily up the dune and stopped on hands and knees admiring her in breathless ecstasy.

THE young girl standing before the kitchen sink straightened, lifted her slender, tanned, dripping hands out of the dishpan, tore the apron from her waist, opened the door and flung herself into the clear spring sunlight of the outside world.

Mrs. Brooks, her mother, called: "Where are you going, Amelia?"

Amelia did not answer.

She was already halfway to the dunes bordering the sea, running like a deer, the long, dark, unbound hair streaming back from her little pointed face, her black eyes fixed upon some intangible distance, her red mouth opened to gather in as much as possible of the cool air, her fists clenched in fury and revolt. Behind her trailed a thin, diminishing wail.

"Ah-me-lia . . . the lunch dish-uzz . . ."

Drat the dishes, thought Amelia.

She ran to the top of a dune and cast herself down, panting and dishevelled. Before her lay the sea, behind her the pale water of the bay; north and south stretched the narrow strip of sandy island, with the town of Beach Crest at one end and the huddled shacks of the pound fisheries at the other. Across the bay were the twin dark lines of motor road and railway tracks, the only connection with the mainland. Amelia glanced wildly in every direction, buried her head in her arms and gave herself up to anger and despair.

Dishes, she thought, three times a day. Meals to cook, beds to make, carpets to sweep, stockings to mend, clothes to wash; day after day, week after week, month after . . . year after . . . I won't stand it. I'm 19. I'm pretty. I'm going to—the phrase fell ready-made into her mind and she smiled wearily—go places and do things.

She lifted her head and glared at the indifferent sea.

"I hate you," she said.

She turned her somber gaze upon the shore and dunes.

"I hate you, too."

She stood up and faced the house where she lived and the village of Bayberry Cove, straggling along the one macadam road.

"I hate you most of all."

SHE sat down again, feeling exhausted but undefeated. A few minutes later she was sound asleep, warm in the warm sand and sunlight. Lying there, peaceful as a kitten, her head pillowed on her tranquil-folded arms, her lips a little open, half-smiling, the black fans of her lashes spread upon her cheeks, all her slim young body relaxed, she was more than pretty; she was incredibly lovely, and Tom Farley, coming in the late afternoon from

Amelia with young vigor hated Bayberry Cove, considered the village a hole where nothing ever happened and where nobody ever poked anyone's jaw

Bright Adventure

by EDWARD SHENTON

town back to the Coast Guard station, paused at the sight of her, stricken with adoration, embarrassed and delighted by catching her off guard. He crawled stealthily up the dune and stopped on hands and knees, admiring her in breathless ecstasy, a lot of words he never dared say aloud tumbling about in his mind, preventing any coherent thought.

Amelia, waking, saw him ludicrously kneeling, saw the blended love and timidity on his square, ruddy face, and felt the full tide of anger returning.

"I hate you," she said drowsily.

"Oh," said Tom, and scrambled to his feet, poised between the desire to retreat and the equally strong urge to kiss and then spank her. But these three impulses had warred in him a long time and he had never been able to execute any but the first. So he stammered and said:

"But . . . Well . . . What's wrong?"

"Wrong? Nothing's wrong. What could be?"

She began to arrange her hair with violent gestures that added to Tom's feeling of intrusion. He said:

"I was just passing. I saw you and you looked so . . . so . . . so . . ."

Amelia's hands were absorbed with the dark puzzle of hair; her eyes focused on the far horizon.

"Yes? I looked . . ."

"Asleep," said Tom.

"Isn't that queer?" Amelia said meditatively. "So you came and spied on me."

"I didn't . . . I wasn't . . ."

"You lost something, perhaps?"

"No . . . I . . . I . . ."

"If it had been Tick Wertzell, he'd have tried to kiss me, probably." Her voice was muffled in remote speculation.

A flare of sudden jealousy lit in Tom's heart.

"Oh, he would, would he?"

"I don't know for sure," said Amelia. "I guess he wouldn't, although he'd want to. No, Tick's afraid of me. He wouldn't have the nerve."

"If I thought he'd try, I'd smack his jaw," Tom said gloomily.

"Would you? Really?"

"Sure."

"I don't think so," said Amelia. She turned and looked directly at him. "I've lived in Bayberry Cove all my life. I've heard Tick Wertzell say he was going to punch Buddy Applegate's jaw; I've heard

Buddy say he'd punch Lem Turner's jaw; I've heard Lem Turner say he'd punch Sam Nickerson's jaw. And nobody's ever punched anybody's jaw."

"Well," said Tom uncomfortably, "you can't go around punching people."

"Why can't you?" asked Amelia.

"Well . . . because . . ."

"If you can say you're going to, you can."

"That's different."

"No," said Amelia slowly, "it's just the same old thing. You're all worms. You don't want to go places and . . . I mean, you haven't any spirit. You don't want to go adventuring." She waved her hand in a gesture of contempt. "You're content to live in Bayberry Cove and marry mushy girls like Hildegard Rosen and have a pack of kids. You're satisfied to make a little money and play poker at the fire house and get fat and die . . ."

"Bayberry Cove is a pretty good place," said Tom.

"It's a hole," cried Amelia. "It's . . . it's nothing. What ever happens here? Nothing! Who ever does anything? Nobody! Why, there's a whole world waiting for you! New York, London, Paris, Russia, Africa, China . . ."

"Who wants to live in China?" asked Tom.

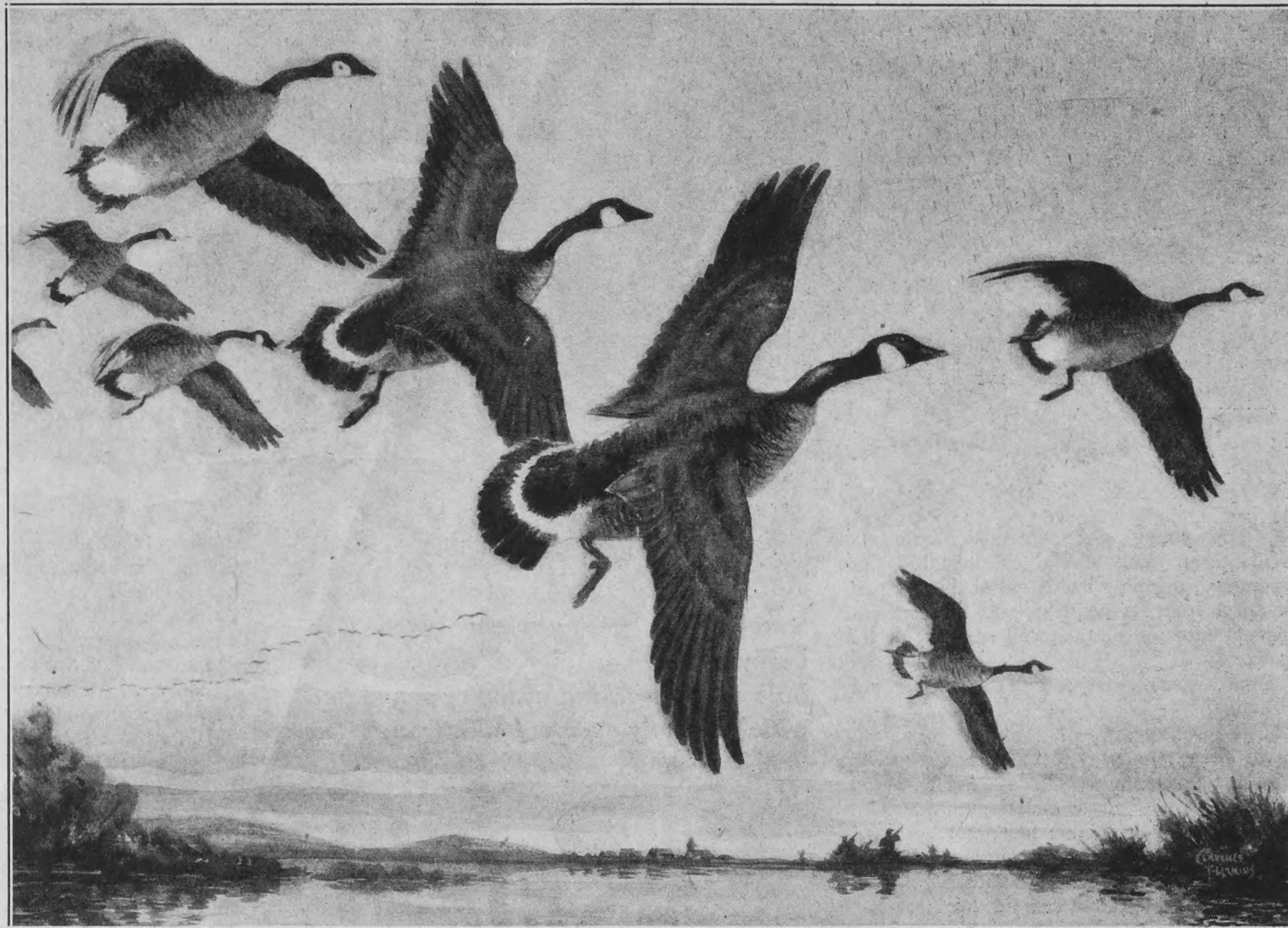
"That's not it," said Amelia. She stood up and wrung her hands. She felt as though she were struggling with some vague, bodiless enemy for some price she could not name.

"You don't want to go to China! There aren't any adventurers any (Please turn to page 58)

Illustrated by Robert Reck



Suddenly one of the geese broke formation and started a rickety skate toward the beach.



FOR three weeks that rainy fall the wild geese lay up in the marshes back of Swiftwater daytimes and moored out on the lake at night. The little backwoods settlement got out its shotguns and banged away at the flock going over, but during the first week not a feather dropped. The geese only flew a bit higher. They were used to this sort of enthusiasm the whole length of the continent. An evening came later, however, during the shooting, the sky full of the hazy red of an October sunset, when one of the geese broke formation directly over the General Store and started a rickety skate toward the beach.

Whit Turner, standing with a group of men and boys, had just opened his mouth to claim that his shot had done it when Bucky Calloway crashed his fist into it. Whit was older and taller, a lanky, raw-boned lad known to be tough. With his mouth bleeding, he dropped his shotgun and a fight began. Some of the men and boys had started toward the shore for the fallen goose, but the rest stopped to watch. Swiftwater was well represented, in fact—Postmaster Briscoe, Nat Stemline of the General Store, old Doc Waters, and Mr. Dell Fraser, a travelling hardware salesman, who called out with ringside relish: "Let 'em go to it. It'll do 'em both good!"

Dusk thickened as Whit Turner took the beating of his life. He was fighting a young catamount, insensate to pain, and the time came when the best Whit could do was to sit up groggily. The other boy stood over him—white teeth showing, eyes under a shock of unkempt black hair gleaming like a young woods animal's—waiting to make sure his job was finished. Meantime he kept jerking away from a girl now pulling at his bloody hand.

"Oh, Bucky! Why'd you do it? Whatall's come over you?" she kept saying.

"Lemme 'lone, can't you?" the winner gasped,

abashed and angry. "I'm sick, I'm goin' home."

He turned and flung away into the dusk.

The interest of Dell Fraser, the hardware salesman, led to questions as the crowd broke up.

"Now that's what I call a high-powered kid," laughed Mr. Fraser. "Did I hear somebody call him Bucky?"

"His name's Bucky Calloway," offered Nat Stemline. "He ain't from this town. He lives up in the woods a piece."

"And who was that slim, stringy-haired girl—his sister?"

"No, that's Bridie Mellott from up on the Shoulder. She and Bucky sort of hold together noticeable."

"What I can't figure is what made him so sore," said the hardware man. "He didn't even fire a shot."

No one seemed positively to know, but old Doc Waters had this to offer: "I believe it was that goose comin' down."

"What did he see in that to fight about? He didn't have a gun with him."

"Bucky's different; his father is, too," said Nat Stemline ponderously. "'Old Never-Stay-Put' we always call Cam Calloway and he's just about as transitory as them wild geese, feels kin to 'em too, they say. Bucky's a piece of the same. This country won't hold either of 'em long, I guess."

"It was the Indians made 'em both queer," elucidated the postmaster. "Father an' son—"

"Indian blood?" Mr. Fraser asked.

"No, but more at home, you might say, in the Indian village than here in town with respectable folk. That was before the Micmacs moved over to the Kennebec Reservation three years ago. Bucky was among 'em a lot as a kid. The Micmac totem, you know, is the wild goose."

"Indian blood nothing," snorted Doane Shattuck, the landman, who had come up. "Cam Callo-

Swift

way and his brood are just fiddle-footed squatters, if you ask me. Plain cracked, too. I ought to know. They're livin' on my land."

There were appreciative snorts from several quarters. "The woods had closed in on the Calloways," was the opinion of most of the townfolk.

But old Doc Waters said quietly in the silence that followed: "If Cam Calloway's cracked, it's a rift that lets in a patch of sky. I'm here to say it's a pity more of us are not like that."

This was a bit technical perhaps. At any rate a silence followed as the Doc moved away in the dark.

THE night was misty and unseasonably warm, the shell ice all gone from the lake margin. Alone, down on the beach, Bucky sat listening to the faint gabble of the geese. He'd been hunting for the wounded bird, which no one had found, knowing that even if it was only winged, it would drink itself to death, for that was the proud way of the wounded goose.

Those sounds out there stirred the boy's blood strangely. Always they brought his father close, as if Cam were sitting there right beside him. Goose talk dropping from high sky or riding the lap of the waves, thin and elfin as the voice of the fall

The Calloways were different. They lived in the woods, on the fringe of a trackless region. Townsfolk considered father and son as being queer, having some strange sense of kinship with wild geese and probably as transitory

wind, keen as heart hunger, haunting as grief or death. It was like Cam's symbol, his totem. His father had said once that a man's soul could vault straight to the high hereafter on a wild goose's call. Whatever could Cam be doing now, Bucky wondered . . . gone off again without a word on one of his strange outjourneys.

At moments a restless ardor flamed in the boy. The misty blackness was like looking down a sooty chimney. There would be intervals of complete silence, except for the lap of the water. He fancied the geese moored out there on the water, taking their long dives for rich tubers among the swaying reeds.

"Must be ten-fifteen foot of water out there where they are," he thought. "Maybe this is their last night here."

CAM would have known about that to the day. Cam could tell just what years the geese would stop here. Bucky could hardly remember when he had first become aware that the wild geese were like the pattern of life—his and Cam's.

Lamed and sore from the fight, he eased his back against a rock. He was sorry about the fight now. There would be hot spots in his chest that wouldn't cool down all summer: one over the way the town would be laughing at him; one over Bridie Mellott's butting in that way. He knew what they'd all be thinking. It was something of that that had come over him at sight of that goose dropping, as if some precious and intimate thing had to be protected, with Cam away and all.

All day he'd been thinking of Cam. As always he felt suffocated in the fear that Cam was gone for good. The core of him seemed muffled in his father's absence. Cam with his magic knowledge of woods, and the weather, and the ways of beasts. Wherever his father was he'd be thinking back

water

by PAUL ANNIXTER

home, with the geese talking up like they were tonight.

Almost the first thing he could recall was being awakened in the night by the wild geese out on the lake and in that same night hearing his mother's tearful voice protesting against his father's going away. The sweetish smell of woods-stilled corn whisky was a part of it too. Cam's secret demon.

Another well-polished memory on the same theme . . . Nearly three years ago—he was just coming twelve then—a year before the old Indian village had been cleared out back of Swiftwater. John Silvernail, one of the elderly Micmacs, just drinking enough to awaken the mournful spirit of his tribe, had called him apart from the other boys one day and said: "Bald eagle fly no more—great totem of great people—all come—all go. Big beaver come no more to make dam like no man can do. Big beaver, totem of great people—all come—all go. Wild goose, totem of great people too. Go pretty soon. Micmac go too. Your father, he know!"

Then Silvernail, holding the wide eyes of the listening boy, was inspired to dilate on the secret nature of the wild geese; what they meant in the exact economy of the creatures; what they stood for upon the swept floors of the sky; how they fasted before rising to their great continental flights; how the old leading gander always knew the exact

time to lift, according to the weather; how they crossed the Great Barren Lands in a single night. As if intoning a dark tragedy, the Micmac revealed the one weakness of the wild geese: corn, the white man's corn. If weather prevented the farmers getting their corn in and the country was not too crowded with houses, the geese would settle and stay with the corn, forgetting their call to the south, forgetting even their dead. They would become heavy, logy, and waddling, a fallen estate.

TWO weeks passed and mid-October came. A still and bitter-sweet melancholy lay over the pinewoods, but beneath that stillness was a tocsin of fierce unrest, for this was the mad time for the most of the forest. The rutting time of the antlered tribes, courting and migration time of wildfowl; time of drumming on logs, of fierce battles in forest glades and erratic, aimless flights through the woods without regard for safety or direction. This was the month when a single old-man partridge would defy deer, bear, and even moose in the rashness of the courting fever. The wild cry of loons sounded from the lake and the spruce groves echoed to the booming of grouse. Even the pheasants, who were a collected folk ordinarily, were a bit giddy and not quite themselves during this period when the hunter's moon was waxing.

The wild-geese flock didn't pass on because of one fallen bird, but continued to linger. And the rains held on intermittently. A backwoods farmer coming in to town bewailed the fact that mud was hub-deep in his fields, that his corn was not in, that most of what the weather hadn't ruined had been eaten by the geese at night. This had a particular and private significance for Bucky Calloway.

These lake woods lay directly under one of the game birds' sky paths between Hudson Bay and the Everglades. In small gaggles and mighty V's the geese went down every fall before the first snows and up again in March with the first thaws. Occasionally, but not every year, they stopped on the lake for a time, as in this particular fall. They couldn't be counted on to stop, but when they did, they stayed a fortnight at least, passing over the Calloway clearing night and morning from the lake.

On the last day the geese stayed, Bucky went alone back among the marshes, passing the site of the old Indian village, away up the lake shore where the wasteland ended, to the hundred acres of swamp and pine that Cam had always wanted to file on as a timber claim. His idea was to learn what the geese did all day and where they concealed themselves, but no sight or sound rewarded him. He found signs though, many webbed tracks in the mud, enough to prove that this was where the geese had their secret place, as Cam had guessed. His father loved it out here. Bucky had a certain dream about this place.

Early dusk was falling when he turned homeward, just as the geese came over on their way back to the lake, but he could still see clearly through the grey—one line of the great V trailing out longer than the other, the mighty gander stretched out ahead, then the second in command, then the point of the wedge. They seemed hurrying tonight and flying carelessly low, Bucky told himself tensely, as faint shots began to sound from the direction of the town. When his eyes came down to earth again, he saw that Bridie Mellott had stopped her father's horse and buggy on the muddy road close by.

"Always hanging around," Bucky thought.

Bridie had the Mellott mare in the shafts today—old Agatha, who could manipulate the back-country roads in mud where no truck or flivver could move a yard.

"C'mon an' get in, Bucky," Bridie called. "I'm going around by your place."

The boy kicked the heavy balls of mud from his boots and climbed up beside her. Bridie was a slim, freckled half boy, Bucky's age and almost as tall. Always there had been a bond between these two. Bridie and her Pa held out against the town's (Please turn to page 83)



Paul Annixter

THE AUTHOR

PAUL ANNIXTER for some years past has been a favorite author with many readers of *The Country Guide*. Starting this month, we are proud and happy to present the first chapters of a five-installment serial by this popular author. It is, by the way, his second full-length story, his previous novel being "Wilderness Ways."

It was a long way for Paul Annixter from Minneapolis, Minnesota, where he was born, to Pasadena, California, where he now lives. As he himself describes it: "At 18 I left school and, unhandicapped by any regulation college education or scholastic honors, took a post-graduate course in the greatest of all schools for a writer—the open road. For two years I threw in my lot with the continental ramblers, crossing and recrossing this country and Canada via the blinds and side-door pullman's—sometimes working awhile, then moving on. I wouldn't part with that road experience for the best indoor education ever put out. Besides the quickening and sharpening process, one achieves the common touch in a way he is never apt to lose."

"Later I took up a timber claim in northern Minnesota. That's another grand forcing-ground for a writer, preferably a timber claim a long way from anywhere at all. By the time you get to talking to yourself in short, pithy paragraphs, you'll be writing, if there's any of it in you. The first story I wrote dealt with the animals, elements and solitude I was up against on my claim. It sold before I proved up on the land and the \$60 I received for it still seems like the high point in my life."

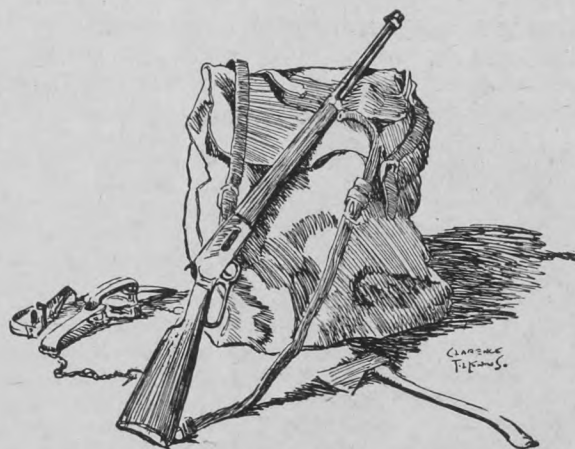
"I have published some 420 stories in the 26 years since then, covering nearly every magazine in the United States, Canada and England. Many of them have been human interest stories, but I've always preferred tales dealing with animals and

nature, as offering a greater chance for uniqueness and innovation, a different, deeper sort of heart quality."

"As a tyro I made a pilgrimage to Kingsville, Ontario, to the home of Will Levington Comfort, the novelist, whose work I had always admired. I intended to stay for the afternoon, but I remained two years, during which time I collaborated with Mr. Comfort on magazine stories, articles and

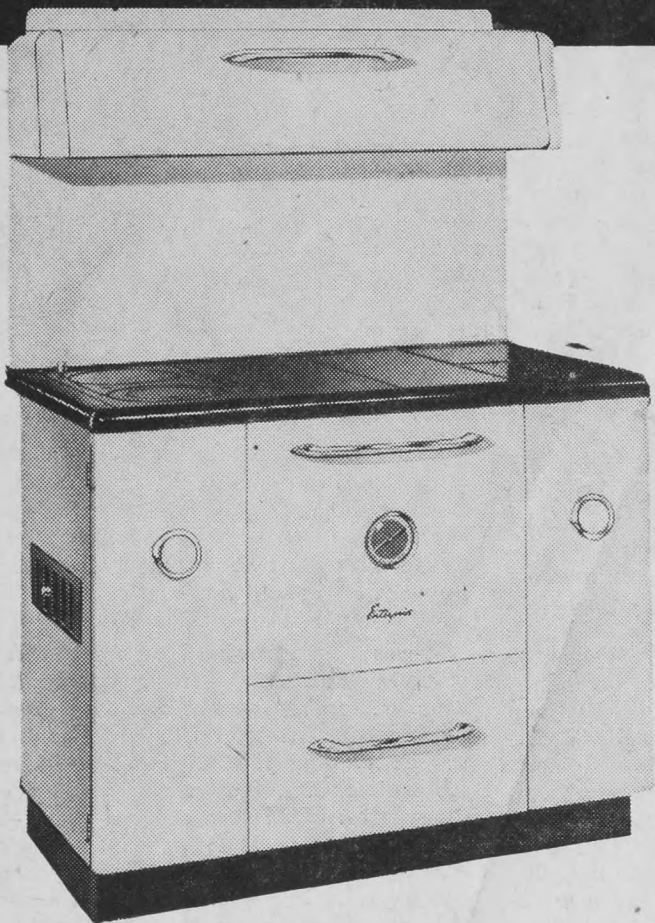
serials. To Mr. Comfort I was indebted for many pointers in the story game. When I left him I took his daughter away with me as my wife."

"I've always believed the head and hands should work together for a balanced life and that the best ideas that can come to a writer are apt to drift off the end of an industrious pick, shovel, or trowel. I take a whirl at gardening or some repair job every day. But I am a sucker for rock, brick and concrete work."



Illustrated by Clarence Tilenius

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Current Happenings in B.C.

People in the coastal province are engaged in harvesting a big run of sockeye salmon, tending trees and, around Kamloops, increasing grass yields

by CHAS. L. SHAW

BRITISH COLUMBIA's Fraser Valley produces some of the nation's finest dairy cattle and small fruits, but at this season of the year dairymen and growers in that lush region have been competition for public attention in the fishermen that operate at the river's mouth.

This year particularly, the Fraser River salmon fishermen appear to be in for a spectacular year, and their harvest will probably run into a good many millions of dollars. This happens to be the year of the Adams River run, which probably means very little to the uninitiated, but it is an event of great significance to all those who make a livelihood from the west coast fishing industry.

The Adams River is one of the Fraser's tributaries which has been the most prolific in its production of the valued sockeye salmon. Since the sockeye runs in four-year cycles, every fourth year sees a Fraser River sockeye salmon pack bigger than the others. This season, however, the Adams River run is more important than ever because it will represent the returning offspring of the migrating fish which ascended the river to spawn in 1946. And that year 1946 was a special one in that it marked the completion of the fishways at Hell's Gate which eliminated the obstruction the salmon had previously encountered in that narrow channel. Until the fishways were built by an international commission representing Canada and the United States at a cost of nearly \$1,000,000, salmon had a hard time reaching the spawning areas in the river's headwaters; millions of them died on the way every season. It was a situation that seemed likely to doom the whole fishery. However, international co-operation has paid off handsomely in this field, because there has been every indication that all the salmon races—not merely the Adams River run—are reaching their spawning grounds now in liberal numbers, assuring abundant catches and packs in the coming years.

The season reaches its height during the last week in August, when probably as many as 2,000 vessels will be operating in the Fraser River area alone, ranging from sturdy purse seiners to tiny gill net craft. The catch will be of more interest than usual to Canadian housewives this year because practically all of it will go to Canadian stores rather than overseas, where it used to go.

THE farmer in the Fraser Valley as well as elsewhere in British Columbia has more in common with the forester than the fisherman, however. The provincial government is trying to persuade farmers that they should be foresters, too, providing of course that they have a sufficient number of commercial trees on their holdings to make them eligible for the farm woodlot program recently initiated.

This program enables the small farmer to create another cash crop from his timber holdings. It is pointed out that management of forest land is not a complicated procedure and can

be co-ordinated readily with farm activity. Nearly every farm comprises some acreage unsuitable for agriculture; it may be too rocky or steep for cultivation, poorly drained, light, sandy or even impoverished soil. But this land might be converted into forest with negligible expenditure and made to yield a worth-while crop within a comparatively few years, and on a perpetual basis. The government has offered encouragement to farmers to undertake the plan.

These farm woodlots are assuming a new importance as a result of the trend of the forest industry in British Columbia. The days of the virgin forest, of trees 200 and more years old, are numbered; the era of the small tree is already well under way, and with it new forms of processing and an emphasis on pulp manufacturing. The pulp mills are paying cash for farm woodlot crops, and the newest mill project, to be located near Campbell River on Vancouver Island and costing \$40,000,000, will depend substantially on the small logs salvaged from areas previously cut over for big trees and on farmers' wood. The farmers are discovering that in their "useless" forest they have a new source of wealth.

THE Korean trouble probably has had a more direct impact on British Columbia than any other province because of geographical location. If there should be a major conflict on the Pacific, this coast would of course be one of the targets of attack, just as it would also provide most of the supply bases for supporting the naval and military forces of the West against the Reds.

Actually, however, the danger of war has not affected day-to-day activity in this west coast province at all, except perhaps in the realm of shipping. Several deep-sea ships operating out of Vancouver have been chartered for special Korean service, other vessels have been engaged to carry ore to Japan, and there has been a diversion of grain shipments.

Grain shipments out of Vancouver have been at a four-year high, however, in spite of this interference. Nearly 60,000,000 bushels were shipped during the season recently terminated, one of the significant features of the trade being the increase in shipments to the Far East. The United Kingdom, however, dominated the business.

UP in the bunch grass country around Kamloops a range experimental station is working on a project to increase the yield of grasses so that the land will support more and fatter cattle. A staff under Tom Willis has been trying to eliminate sage brush by various means, including spraying with 2,4-D from aircraft, and some reseeding with wheat grass has also been done by plane.

A correspondent has taken this column to task for reporting that orchard losses in the Okanagan Valley were only about five per cent. Unfortunately, at the time the column was written the full extent of the damage could only be roughly estimated, and

the government's own figure was substantially less than the actual tragic loss that became apparent as the season progressed. The complete record will never be known because the storms of last winter affected orchards to an extent that will not be determined until several crops have been harvested. Uncounted thousands of trees were killed; others so severely damaged that their yield will probably be permanently retarded. In round figures A. K. Loyd, president and general manager of B.C. Tree Fruits Ltd., marketing agency for the Valley, placed the loss at more than \$8,400,000. In some soft fruits the loss was rated as high as 95 per cent of the crop.

Peace Tower

Continued from page 4

Iron Curtain diplomats, and we all enjoyed the ice water.

Since then, he tells me, he has had a son born in the Civic Hospital here in Ottawa, and he wants me to go out to the Clemow Avenue Legation to drink a toast to his boy's health.

I find the I.C.'s all easy to get along with, provided you do not discuss controversial topics. If you do, they dry up. Or so others have said.

The comparison is this; you would hardly go up to a Catholic and get into a fight about the Pope, if you were a Protestant. If you were a Catholic, it is unlikely you would try to make fun of the moderator of the Presbyterian church with a strong Presbyterian. Rather, you would talk about the 1,000 things you have in common, and avoid the one topic on which you could never agree in 1,000 years.

THE Russians know that I am a good Canadian; I know they are loyal to Stalin. The Poles know that I believe in my own country; I know they are ardent Poles. Similarly, the Czechoslovaks are good Gottwald men, just as I am a good St. Laurent man. The Czechs don't try to make a communist out of me; I don't try to Canadianize them. And that is the way it stands.

The Czechs are the Scots among the Slavs, dour, rather terse, down to earth, practical, sometimes dull. The Poles are the Latins of the Slavs, imaginative, dreamy, impractical, gracious. The Russians are like the English, like good food, like to be boss, enjoy family life, comfort, and generally, enjoy life.

People depict the Iron Curtain diplomats as snooping and sneaking around, see them as sinister characters. Well, if they are, what is our side doing in Moscow, or in Warsaw, or in Prague? In any case, I do not know the answer. All I can say is that the Iron Curtain lads are here according to international agreement, and we have the same number of Canadians in their home towns, according to the same international agreement.

All I know is that most Canadians think of these Iron Curtain men as terrible, terrible people. In reality, they are like us, worrying about their children, their wives eyeing each other for style hints, men and women fretting about the comfort of their guests. They have babies, get drunk, take baths and make love like Canadians.

You needn't be afraid of these Iron Curtain diplomats. They won't bite you.

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News of Agriculture



The British Agricultural Mission who visited Canada June 27-August 24 (left to right): Dr. D. P. Cuthbertson, Professor Ewen M'Ewen, Sir William Ogg, Professor W. Ellison, W. H. Senior, Dr. W. F. Darke, J. H. Anderson.

British Agricultural Mission

ON August 24 the British Agricultural Mission, headed by Sir William Ogg, Director of the famous Rothamsted Experimental Station, sailed from Montreal for England. Arriving on June 27 as guests of the Federal Department of Agriculture, they had been given an intensive view of Canadian agriculture and, in particular, had met the leading figures in all branches of Canadian farm science from Prince Edward Island to Vancouver Island.

The seven-man mission included, in addition to Sir William Ogg, whose specialty is soil science, Dr. D. P. Cuthbertson, Director, Rowett Research Institute, Aberdeen (animal science); Professor W. Ellison, University College of Wales, Aberystwyth (agronomy and extension); J. H. Anderson, National Agricultural Advisory Service, Cambridge (extension, education, dairying); W. H. Senior, Assistant Director, Department of Agriculture for Scotland (administration, education, economics); Professor Ewen M'Ewen, University of Durham (agricultural machinery and education); and Dr. W. F. Darke, Agricultural Advisor to the U.K. High Commissioner in Canada (economics and commerce).

The visit of this mission of distinguished agricultural scientists to Canada from England was in return for a Canadian mission to England last year, which went over at the invitation of the U.K. Government. Both groups, according to the participants, returned to their respective countries highly charged with new experiences, and benefitted from the exchange of ideas and knowledge with outstanding individuals in their own fields.

Honey Vote in Sask.

BY the time this issue of The Country Guide reaches our readers, honey producers in Saskatchewan will have voted (September 7) on the plan proposed by the Saskatchewan Honey Producers Co-operative Marketing Association Ltd. to set up a honey marketing plan under the Saskatchewan Natural Products Marketing Act, 1945. Under this Act, marketing boards may be established for the purpose of regulating the marketing of any natural product within the province.

Last year parliament passed the Dominion Agricultural Products Marketing Act, 1949. Under the authority of this Act, boards set up under pro-

vincial legislation may secure, from the Governor-General-in-Council, authority to exercise the same control outside the province concerned.

The provinces of Alberta, Saskatchewan, Manitoba and Ontario are the major honey-producing provinces, and the market for honey is largely a domestic market. Saskatchewan honey producers hope that the other three provinces will be able to join with them in an interprovincial honey marketing scheme, but feel that *even on a provincial basis the step will be worth while.*

According to the plan on which the vote was taken, honey producers with 10 colonies or more would be registered. Such producers were entitled to vote on September 7, and they may also vote in the election of members for the Honey Board. They will be required to market all their honey under the regulations of the Board. Beekeepers with nine colonies or less need not register, but may voluntarily join in the operation of the plan, by which step they would automatically come under the regulations of the Honey Board.

Proceeds from the sale of honey will be pooled according to grade and distributed to individual producers, after the necessary deductions for administrative and selling expenses have been made.

School of Art

RURAL Manitoba folk who are interested in fine and applied arts will be pleased that the University of Manitoba is establishing a school of art in the old Winnipeg School of Art, which it has taken over. The new School of Art will be well staffed and will be administered by the Department of University Extension and Adult Education. A three-year diploma course will be offered for which there will be virtually no academic requirements. In addition, a four-year course after grade XI will be offered, which will lead to a Bachelor of Fine Arts degree. These two courses, besides the degree course in Interior Design recently established in the School of Architecture, will round out the University's program of instruction in the visual arts.

Leaner U.S. Hogs

FOR many years the characteristic U.S. market hog was definitely of the lard type fed basically on corn, and produced to a substantial extent in the corn belt. During the postwar years there has been a definite tend-

ency toward the leaner type of hog, primarily because of the decrease in the market value of lard, which resulted from the competition of oil-seed crops in the supply of fats and fatty products for the U.S. domestic market.

The influence of this change in fat source on the value of the hog carcass in the United States has been considerable. The United States Department of Agriculture points out that in 1905-19 the wholesale value of the lard in 100 pounds of live hog was about 46 per cent of the value of the lean cuts; in 1929 it was 38 per cent; and in 1949 only 16 per cent. In 1905-19 the fat cuts averaged 55 per cent of the value of the lean cuts; in 1929 the percentage was down to 46; and in 1949 to 33 per cent. That is, in 1905-19 the value of the lean cuts in 100 pounds of live hog was 48 per cent of the value of the total product, while in 1949 this percentage had risen to 65. Lard dropped from 22 per cent of the value of the total product to only 10.5 per cent in 1949.

Translating these facts into dollars, the average value of the lean cuts in 100 pounds of live hog in 1949 was \$13.87, that of the fat cuts, \$4.57, and that of the lard, \$2.26. If the relationship last year had been the same as in 1905-19, the average value of the fat cuts would have been \$7.63, and that of the lard, \$6.35. This would have meant that the total value of the products in 100 pounds of live hog would have been \$7.05 higher. From 1920-29 to 1949 the annual average wholesale price of lean pork cuts at Chicago rose 115 per cent; the average for the fat cuts rose 53 per cent; the average of lard prices declined seven per cent. In keeping with these trends, grades for hog carcasses, more suitable to the sale of leaner hogs, have been developed.

A.I.C. Scholarships

SIX additional scholarships, bringing the total for the last five years to 68, were recently awarded to Canadian agricultural scientists for advanced training, under the auspices of the Agricultural Institute of Canada. These scholarships are of \$800 value each and have been contributed by agricultural and associated industries across Canada. Three of the scholarship winners come from Ontario, two from Saskatchewan and one from British Columbia. Three are graduates of Macdonald College, Quebec, two of the University of Saskatchewan, and one of the University of British Columbia. They will continue their studies, each in a different field, including dairying, soils, animal nutrition, agricultural economics, plant physiology and agricultural engineering. They will also study at six different institutions, the University of California, the University of Wisconsin, the University of Saskatchewan, Oxford University, England, Michigan State College and the Ontario Agricultural College, Guelph.

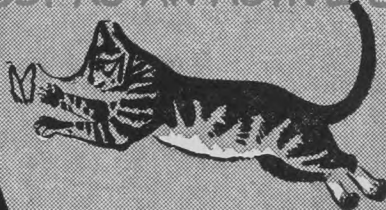
Fertilizer from Aircraft

SEVERAL government agencies in New Zealand have co-operated in recent years to study the practicability of distributing fertilizer by air. The problem in New Zealand has been the distribution of fertilizer to hilly pastures, and 13 areas, of from 50 to 80 acres each, were included in these tests.

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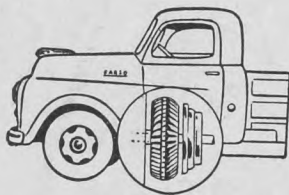
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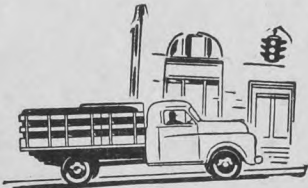
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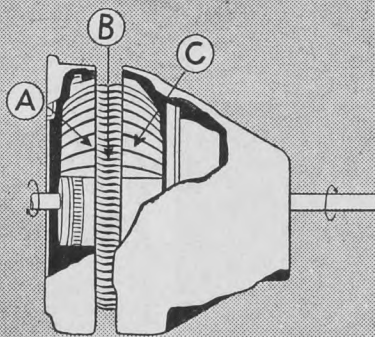
To hold on hills, shift to a lower gear, engage the clutch and increase the engine speed slightly. When ready to go—simply step on the gas!



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It was found that the use of light aircraft reduced the cost considerably below the cost of hand top dressing. It was also found that an aircraft flying about 400 feet above the ground and making parallel flights 90 feet apart could apply 225 to 250 pounds of fertilizer per acre (superphosphates). Flying at this height, much of the finer material did not reach the ground near the target area; but light aircraft, flying at 50 to 100 feet above ground, gave reasonable satisfactory distribution of ordinary commercial superphosphate.

Our U.S. Markets

THE leading article in Collier's on September 2 entitled "The Great Potato Scandal" was a somewhat hectic review of political opinion in the state of Maine, on the subject of imported Canadian potatoes. Complaints were centered around three allegations: (1) That the dumping, give-away and other disposal measures used in connection with the U.S. potato-price-support program for the 1949 crop, will cost the U.S. Treasury about \$100 million; (2) that in the face of this loss Canada has been permitted to export 14 million bushels of potatoes to the U.S. market; and (3) that as a result of these imported potatoes the cost to the U.S. Treasury will be increased by \$18 million and thousands of persons have been thrown into unemployment in Aroostook county, Maine.

The Country Guide does not know the precise facts with respect to any one of the three allegations, but there is at hand a copy of a letter by Charles Brannan, Secretary of the U.S. Department of Agriculture, in reply to 37 U.S. congressmen who requested him, under Section 22 of the Agricultural Adjustment Act of 1938, to request the President to direct the Tariff Commission to study the effects of imports of cheese, dried milk powder, corn, barley, oats, dried beans, potatoes, pork, pork products, dried and shell eggs, and grapes; and later to recommend such import quotas and penalties as would permit the utilization of all U.S.-produced stock of these products. The Secretary pointed out in his reply that, taken as a whole, U.S. exports of the commodities listed were more than four times U.S. imports, measured in dollar value. Canada was the source of almost all these imports, particularly barley, oats, potatoes, fresh pork, eggs in the shell, and milk products, in addition to from one-fourth to one-half the grapes, pickled pork and cheddar cheese. Imports of these products amounted to no more than one or two per cent of U.S. domestic production, with the exception of barley (six per cent), potatoes (2½ per cent) and cheese (3½ per cent). Omitting these three products, imports of the remainder were considered by the Secretary to be "insignificant relative to domestic production."

With respect to potatoes, the Secretary said: "Potatoes present a special problem which I have presented to Congress. With a sound domestic program, we would have much smaller imports. Arbitrarily restricting imports amounting to only 2½ per cent of domestic production would not make an appreciable contribution to the solution of our domestic potato problem, but would have a serious impact on our trade relations with Canada."

YOUR LOCAL FARGO DEALER WILL GLADLY DEMONSTRATE FARGO FLUID DRIVE!

Get It at a Glance

Small paragraph about many things of importance to farmers

A. P. MacVANNEL, Chief Registration Officer of Livestock Records for the Federal Department of Agriculture, retired last month, after serving in that capacity for 20 years. His work consisted in the administration of the Livestock Pedigree Act. He will devote his attention to two farms which have been in his family for many years.

FOR the crop year which began August 1 in Canada, the Federal Government has decided that the Canadian Wheat Board will sell wheat for consumption in Canada at the same price as provided under the International Wheat Agreement. This means a maximum of \$1.98 per bushel and a floor of \$1.54 per bushel, basis No. 1 Northern Fort William - Port Arthur, or Vancouver. The Board's selling price under the International Wheat Agreement is presently \$1.98.

DURING the year ending June 30 the Rural Electrification Administration of the United States Department of Agriculture, through money lent to rural electrification associations, was responsible for 485,000 consumer connections and for energizing 185,000 miles of line. During the year the Administration approved loans totaling \$375,151,000, for an accumulated total of \$2,205,470,000, to 1,000 borrowing associations serving 4,260,000 consumers and operating 1,125,000 miles of line.

THE Manitoba Department of Agriculture has now co-ordinated the general course at its Brandon School of Agriculture with the first year of the Diploma course in agriculture at the University of Manitoba. Both courses begin in November and end in March, and successful students at Brandon and of the first year of the two-year course at the University, may enter the second-year course at the University and receive a diploma at the end of the second winter's work.

FIVE hundred and ninety entries were received in the 1950 National Barley Contest, Saskatchewan leading the three prairie provinces with 250 entries, in addition to which there were 232 from Manitoba and 108 from Alberta.

PRACTICALLY all of Canada's production of Canada bluegrass seed is in the Niagara district of Ontario and practically all of the Kentucky bluegrass seed Canada produces comes from the Interlakes district of Manitoba. The production of Canada bluegrass seed this year is estimated at 150,000 pounds of clean seed, or 47 per cent of the 13-year average; while the 1950 crop of Kentucky bluegrass is expected to be more than four times the eight-year-average figure and to amount to more than one million pounds, which may sell at 4½¢ to 5¢ per pound, a record price.

TOTAL co-operative business in Canada last year exceeded a billion dollars, a record figure which represented an increase of \$200,000,000 over 1948. Of the total, co-operative sales of farm products accounted for \$783,300,000. An estimated 55.1 per cent of grain products were sold co-operatively for the 12 months ending July 31, 1949.

SIXTY per cent of Canada's 8,251,000 cattle are said to come under the tuberculosis control policy of the Federal Department of Agriculture.

SINCE August 14, Canadian cattle which have been officially vaccinated against brucellosis (Bang's disease) and certified as such by a salaried, Canadian Government veterinarian, may be shipped to the United States without blood tests for brucellosis, for 22 months after vaccination. Up to this time only cattle officially vaccinated in brucellosis-free listed herds were eligible for entry without blood test for this disease, and up to 24 months of age only. The change raises the age limit to 30 months.

THE Canadian cost of living index for the month of July has shown the following course during the past four years: 1947-135.9; 1948-156.9; 1949-162.1; 1950-167.5.

CANADA has successfully controlled hog cholera for 50 years by requiring the slaughter of infected animals. The total cost has amounted to \$1,058,039 for indemnities to hog owners. In the United States, where a different method is used, the cost is running about \$40,000,000 per year, and the control is not considered effective.

THE principal grade delivered to the 1949-50 Flax Seed Pool was Canada No. 1 Western, on which the Canadian Wheat Board realized \$3.74.3 per bushel net, and on which the final payment has been mailed, amounting to \$1.24.3 per bushel. This payment was made on all flax grades except No. 3 C.W. flax seed, and lower.

SINCE October, 1948, when export restrictions into the United States market were lifted, Canada has exported to this market 990,000 head of cattle and 175,000,000 pounds of fresh meat, or an equivalent total of 1,437,000 head of cattle.

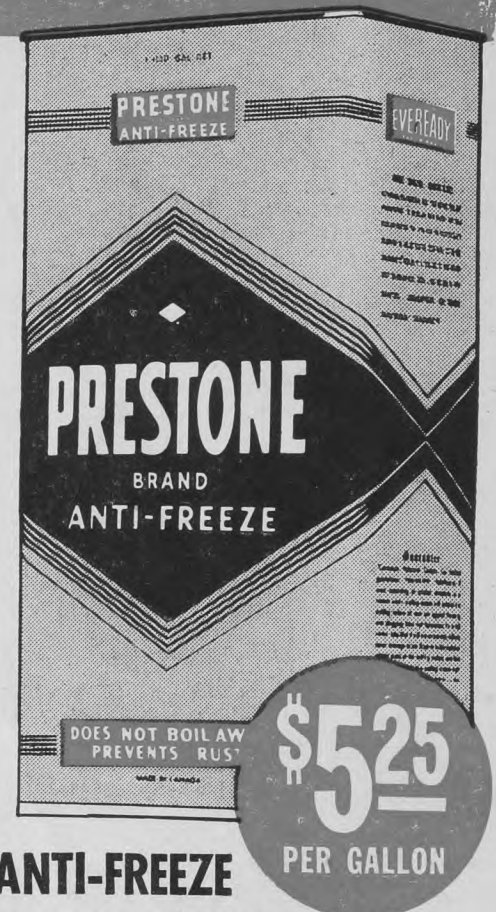
THE National Livestock Loss Prevention Board in the United States estimates that the loss of meat annually through careless handling and hauling of livestock amounts to 50,000,000 pounds, worth \$30,000,000.

THE discovery and use of penicillin represents a new approach to the control of diseases in man and animals. Scientists in the Department of Agriculture, Ottawa, are working with some success toward the development of substances similar to penicillin, to be used in the control of certain seed-borne diseases of plants.

INDICES numbers for the commodities and services used by Canadian farmers are computed as of January, April and August each year. The composite index, inclusive of living costs, showed a rise of almost 10 points for western Canada from January to April. The rise for the composite index, exclusive of living costs, was 15.3 points and stood at 206.6 in April, as compared with 191.3 in January. This increase was largely accounted for by a seasonal increase in farm wage rates, which rose from 315.4 to 398.4 and by three other cost items, building materials, feed and seed.

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"MYPENS" (streptomycin with penicillin) — Vials of 6 — \$2.00

If you prefer to use an ointment, ask for "Cillenta"
Veterinary or "Myphen" Ointment.

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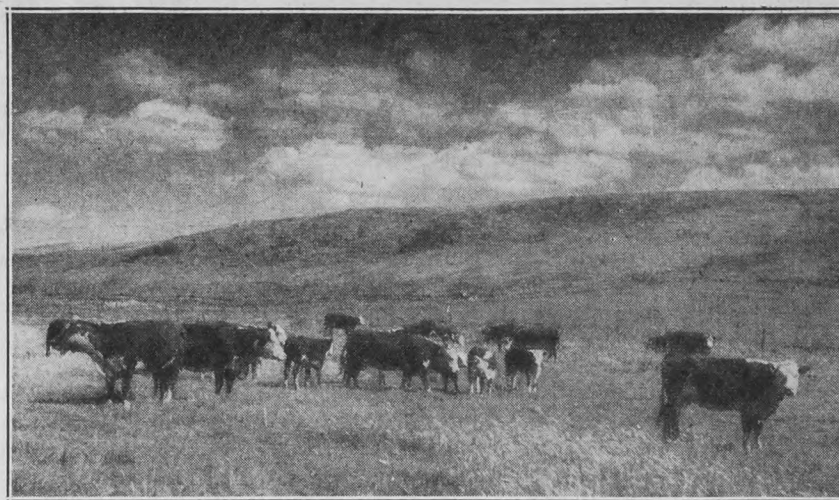
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One favorable feature this year has been that despite a late spring and early dryness, growth generally has been excellent and hills have been green into mid-August.

Swine Feed Supplement

THE feeding of a balanced ration to swine is likely to increase the gain that will be realized. Protein, mineral and vitamin supplement are commonly needed for the promotion and maintenance of health and vigor, and efficient gains in swine.

Probably the best protein supplement for all classes of pigs is skim milk. It also supplies certain minerals and vitamins. Varying amounts of skim milk or buttermilk can profitably be fed to different classes and ages of swine. One to two pounds of these products per pound of grain is recommended for pregnant and nursing sows. About two to 2½ pounds is right for weanlings, with the amount gradually reduced to one pound per pound of grain for finishing market pigs. For nursing sows and nursing and weanling pigs it is desirable that the skim milk should be sweet.

If skim milk is not available some substitute such as tankage, or a mixed protein supplement is valuable. The amount of tankage to feed will vary from eight to 10 per cent for nursing and weanling pigs to four or five per cent for finishing market pigs and for pregnant and nursing sows. Directions for feeding mixed supplement are supplied by the manufacturer.

Common salt, calcium and iodine are the minerals most likely to be missing in ordinary rations. One-half to one pound per 100 pounds of grain mixture should provide an adequate intake of salt. Iodized salt should be fed. If skim milk, tankage or mixed supplement are fed, it is not likely that calcium will be in short supply in the ration. If these are not fed, the required calcium can be supplied by adding one-half to one per cent of ground limestone to the meal ration of all pigs.

During pregnancy, it will be found that iodized salt does not provide sufficient iodine for the sow, according to W. W. Cram, Dominion Experimental Farm, Indian Head, Sask. In addition to the iodized salt, a tablespoonful of a solution consisting of one ounce of potassium iodide dissolved in a gallon of water, should be fed two to three times weekly. Iodine deficiency can be responsible for hairlessness, flabbiness and general weakness in new born pigs.

If nursing pigs are housed indoors and no iron supplement is fed, there is a danger of anemia, causing severe losses during the nursing and wean-

ling stages. This danger can be eliminated by placing on the tongue of each young pig, within two or three days of birth, sufficient iron sulphate to cover a dime, or half this amount of reduced iron. This should be repeated weekly until the young pigs are four or five weeks of age. The feeding of a good pig starter from the three-week stage will reduce the danger from anemia and from other nutritional deficiencies.

Vitamin deficiencies are likely to appear if pigs are housed without pasture, green feed or direct sunlight. In this case the feeding of a teaspoonful of a vitamin feeding oil weekly to nursing pigs is desirable. The same amount should be fed daily to weanlings. Two teaspoonfuls daily to growing pigs up to 125 pounds, pregnant and nursing sows, is also likely to improve the health of the herd.

Feed Beet Tops

WHEN harvesting sugar beets many producers throw away a good source of feed when they discard the tops. Experiments have recently been carried out by Frank Whiting, at the Experimental Station, Lethbridge, Alberta, and he has established that sugar beet tops have considerable feed value. In the experimental work, the tops were preserved as silage by hauling them from the field while they were still green and piling them in a stack about 10 feet square (the ground area was determined by the amount of tops available).

One group of 10 good quality yearling steers, and one group of 38 range lambs were fed a ration of alfalfa hay and grain, while groups of 10 similar steers and 38 similar lambs were fed a ration in which one-half of the alfalfa hay was replaced with beet top silage. It might be noted that an attempt was made to feed further groups exclusively on beet top silage and grain, but they scoured so severely that some alfalfa hay had to be added to the ration.

The group of steers that were fed alfalfa hay, beet top silage and grain, out-gained the group that were fed alfalfa hay and grain exclusively. Both groups required about the same amount of feed per pound of gain. In the case of the lambs the rate of gain was approximately the same for the two groups, but those lambs fed beet tops required more feed per hundred pounds of gain. It was also found that

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the group fed beet tops had higher grading carcasses in all cases.

The experiments indicated that three tons of beet top silage, which is 64 per cent moisture, were equivalent in feed value to one ton of alfalfa hay when fed to the steers, and to three-quarters of a ton of alfalfa hay when fed to the lambs. The difference is due to the fact that the steers made more efficient use of this type of feed. Also, beet top silage was found to be quite laxative, and it is recommended that at no time should it make up more than half of the roughage allowance on a dry matter basis.

It was found that an average crop of beets, running 11 to 12 tons to the acre, will yield sufficient tops to make three to four tons of beet top silage, equivalent to about one ton of alfalfa hay, which, at today's prices, suggests that the tops on an acre of sugar beets are worth a matter of \$20 to \$25 when fed to fattening steers and lambs.

If silage is to be made from beet tops it is important to keep it as free from soil as possible. If the leaves have become dry before being hauled from the field, water should be added as the stack is being built in order to provide optimum fermentation conditions. It is not necessary to add any preservatives to ensure good silage fermentation, nor is it necessary to trample the stack as it is being built. A good stack of beet top silage is a most useful addition to any feed lot.

More Beef from Pasture

OVER a period of years pasture that is given good care will out-yield pasture that is overgrazed. The amount of beef that can be produced on any pasture can often be significantly increased by supplementing it with a field of crested wheat grass. Studies with wheat grass, conducted at the Dominion Experimental Station, Swift Current, Saskatchewan, have established that one acre of this grass is equal to over four acres of native sod during the spring period. Perhaps the greatest value can be gained from crested wheat grass by developing one-quarter of the pasture area with this crop, and grazing it until mid-June when native pasture is well developed. In this way, the carrying capacity of a field will be nearly doubled.

On native pasture, heavy grazing will produce more beef than light grazing for the first three years, but if this treatment is continued, a decline will occur. At the end of six years, the annual yield of feed will be down to about half that of moderately used range land.

When pastures are grazed beyond their natural capacity, the first evidence is a reduction in the yield of grass. This is followed by a reduction in the grass cover, and a corresponding increase in weed growth. The longer the overgrazing continues, the longer will it take for the field to be brought back into good condition. It is possible for very intense grazing to deplete native ranges to a point where they will not recover.

There is some tendency to think that a field is not being overgrazed if weeds, such as pasture sage, do not appear. Actually many weeds are grass-like in appearance, and many overgrazed pastures in southwestern Saskatchewan are producing sedge. These are low growing plants that

look like grass. They are green in the spring, but by early summer they turn yellow, and are responsible for a serious reduction in the carrying capacity of native pasture. Satisfactory pasture production can be maintained by moderate grazing.

Inside Information

SCIENTISTS who have had to deal with animals would often like to look inside the animal and see what is going on, especially in the digestion of foods.

Sixty years ago the first scientist made an opening in the side of a cow into the rumen. It was about 40 years later that a cow at the Pennsylvania State College of Agriculture, named Pennstate Jessie, was given a stomach window. Since then openings have been frequently made as an aid to the study of cow digestion, especially in the rumen. Recently at the University of Wisconsin, a glass window has been installed, looking into the rumen of a Holstein cow, through which the food can be seen through a transparent plastic cap. The cow doesn't seem to mind at all, according to Wisconsin authorities, and the cap is as easy to remove as the cap on the gas tank of a car.

It appears that cows so treated behave normally in every respect. They calve normally, and those at Wisconsin did not miss a feed when the windows were put in.

Inside the rumen, tremendous numbers of microscopic plants and animals grow constantly. They help the cow to digest her food by breaking down the fibre, but they also build protein, carbohydrates and fats into their own tissues, and are able to create some of the vitamins. The cow in the course of time, digests these bacteria, getting the benefit, according to the Wisconsin scientist, "of the improved food produced on this small scale farm which continually operates inside her rumen." We are also told that because of the extremely rapid rate at which these organisms grow and multiply, they may form a substantial part of the food from which milk is produced.

The window consists of a strong transparent plastic tubing, with flanges which, when inserted, hold the window firmly in place by gripping both the inside and the outside of the rumen and abdominal walls. The plastic cap screws on the outside, so that samples of the contents of the rumen may be taken. The device requires specially designed instruments when inserted into the side of a cow or taken out.

Varying Cream Tests

CREAM tests showing considerable variation have always caused dissatisfaction among cream producers, and probably will continue to do so for a long time to come. Recently a mechanical cause of this variation has been pointed out by A. B. McLeod, Dairy Branch, Manitoba Department of Agriculture.

Part of the difficulty results from the fact that advice has generally been given in the past to the effect that if the screw on the bowl of the separator is turned, the separator will produce a higher testing cream. Mr. McLeod points out that this is true if it is a cream screw, but if it is a milk screw, turning it will produce a lower-testing cream. He adds that, in

recent years, certain cream separators have been manufactured with milk screws rather than cream screws. The fact that now there are some separators with, and others without cream screws, is confusing to the producer, as well as to those who make recommendations to producers. The confusion is further confounded by the fact that many of the instruction booklets have been mislaid or discarded, so that the person giving advice should really inspect the separator to make sure which type it is.

In any case, adjustment of the separator should be made only when it is clearly necessary, and only after checking such factors as temperature of the cream, speed, balance of bowl and cleanliness. It will seldom be found necessary, says Mr. McLeod, to adjust the screw, unless a radical change is desired. If done, the adjustment should be made gradually, turning the screw not more than a quarter-turn at one time. Normally, the separator should skim the milk to give the cream 30 and 40 per cent fat. The value of an instruction book is illustrated by a cream separator very strikingly. It is a vital part of the separator and it should always be kept for reference.

Hereditary or Congenital?

IT is useful for a stockman to know the difference between a hereditary disease and one that is congenital. The difference however, is not altogether easy to explain. Let us take two illustrations, the first hereditary, and the second congenital.

By hereditary we mean a characteristic transmitted genetically (by the genes). An inherited disease may not appear in every generation, although it is likely to do so. Certain characteristics, such as hornlessness in cattle for example, do appear regularly because they have been established as "dominant." The study of inheritance or heredity is a very complicated one, but in general it is nature's method of making sure that sons and daughters resemble their parents. It is illustrated for example, by the fact that in both human beings and animals, there is a disease that makes the individual bleed easily and freely. This disease is inherited and is transmitted from parents to offspring. Nothing can be done to prevent its occurrence. It is carried in the genes and chromosomes of the individual.

A congenital disease is one which is disseminated or given to offspring, principally if not altogether through the uterus of the dam. It is not in-

herited, but if some condition affects the uterus of the dam or if she has contracted a disease in the uterus, which is transmitted to the foetus or unborn offspring, the offspring is likely to be born with that disease.

Tuberculosis in cattle for example, is an illustration of a disease which is not truly hereditary and may or may not be congenital. For example: If the dam has tuberculosis of the uterus, or if she has tuberculosis so that her uterus and perhaps other parts of her body are affected, the germ is likely to be transmitted to the unborn calf, in which case the disease of the calf would be congenital, having been acquired by infection during gestation, and not having been transmitted as an inherited characteristic. If, on the other hand, the dam has tuberculosis in certain parts of her body, which leaves the uterus unaffected, and if no germs come in contact with the foetus, the calf will be born free of tuberculosis. It will then be non-tubercular, unless affected after birth.

Maintaining Milk Quality

IF high quality dairy products are to be made from milk, it is particularly important, especially during the hot summer months, to keep the milk quite clean. This means that the dairy herd and milk utensils must be afforded proper treatment.

Well-ventilated and well-lighted barns, with a steady supply of clean water, are of prime importance in maintaining healthy animals. Flies can be controlled in the barn through regular spraying, and so do away with one source of contamination. Utensils should be of stainless steel or else well tinned, and free from crevices and easy to clean. Best results in cleaning utensils will be gained if a dairy cleaner and a brush are used. If it is not convenient to use a sterilizing solution on the utensils, it is a good substitute to scald them after washing, and leave them inverted in the sun to dry. They should, of course, be protected from dirt and insects.

If the udders and hind quarters of the dairy cows are clipped, it is easier to keep them clean. Just before milking, the udder of each cow should be wiped with a clean cloth which has been dipped in a chemical sterilizing solution. If a separate cloth can be used for each cow, it has been reported by the Central Experimental Farm, Ottawa, that the bacterial count, and so the spread of disease will be reduced.

After clean milk has been drawn, the milk should be cooled to 50 degrees, or even lower.



This is the year to plan for and set aside a generous feed reserve. In most areas generous growth has been secured, and also there may be substantial quantities of low-grade frosted wheat.

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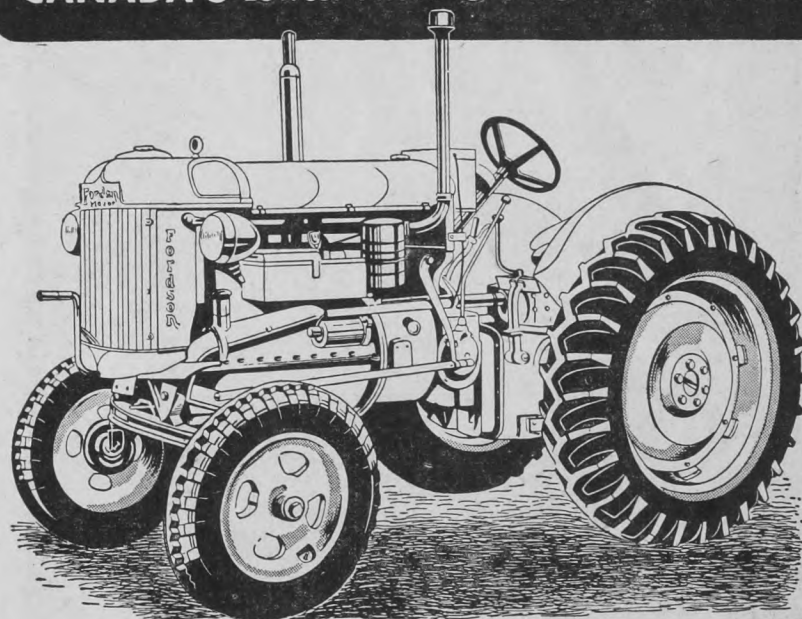


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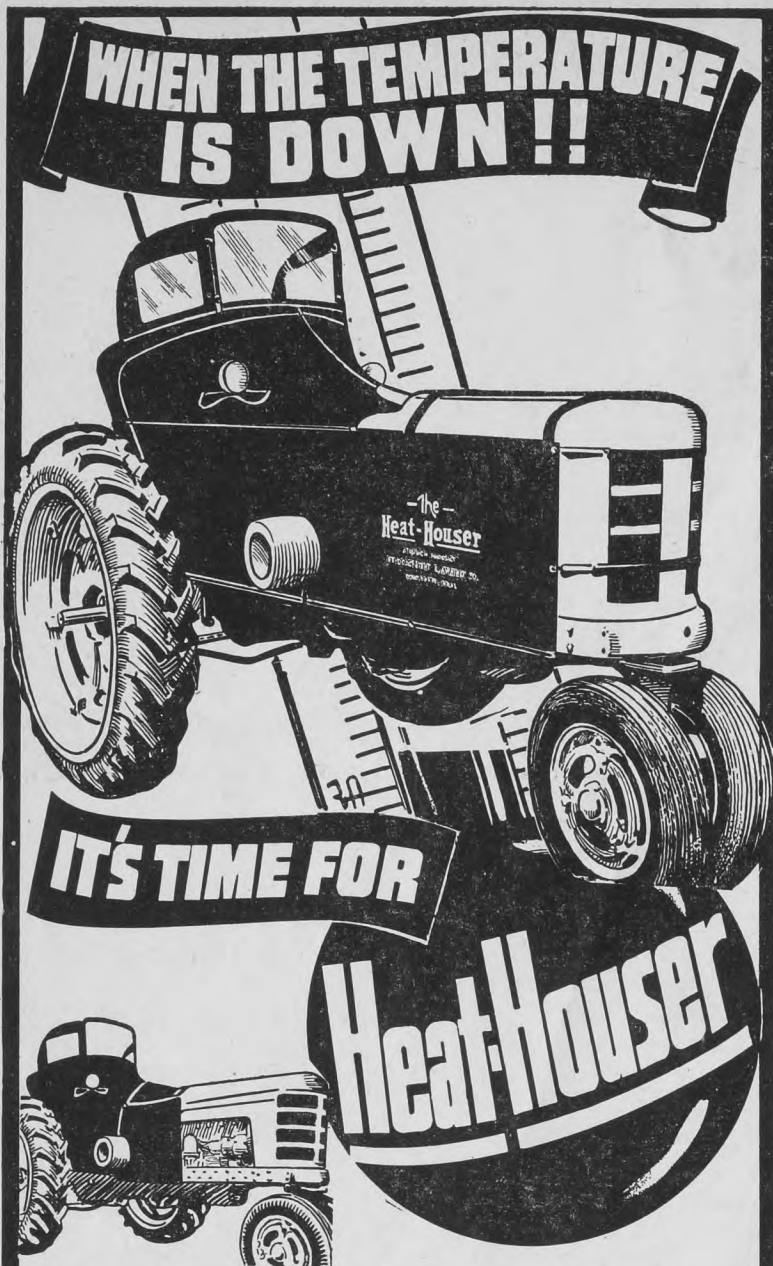


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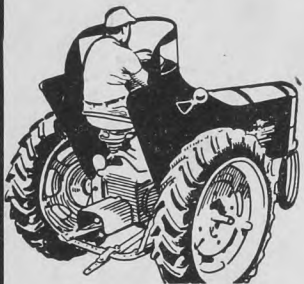
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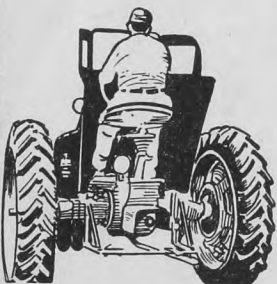
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A-Bombs

Continued from page 7

too, personnel and materials are exposed to a maximum of flash burns and external radiation. Protection from these damaging, burning rays is gained by taking cover. Since their penetrating powers are low, a wooden wall, tent or other light article can provide considerable protection if it is between the body and the center of the explosion. Casualties at Hiroshima and Nagasaki were found to have gained protection from loose white clothing. In one case where a black and white polka-dot dress had been worn by a Japanese woman, the burns on her flesh occurred in a regular pattern under the black spots of the covering material.

BOMBS bursting at or below ground level cause more prolonged radioactivity than those which burst in the air. Some materials present on the ground become induced with radiation and continue to be emitters for some time after the blast. In addition to this is the prolonged activity of the "fall-out." This may be dust or water vapor which is drawn up into the atmosphere by the explosion and heat, is made radioactive and for a period of from four to five hours continues to settle back to the ground and contaminate those articles on which it falls. During this period, personnel should remain under cover.

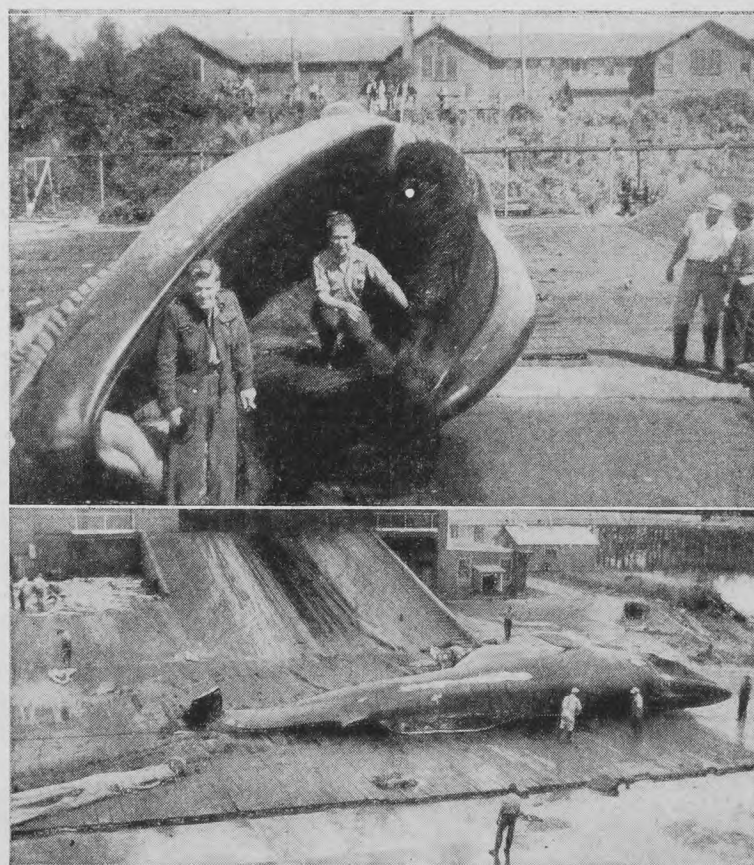
American analyses of the casualties in Japan indicated that about 80 per cent of the injuries were of types commonly occurring in warfare. Only 20 per cent of the casualties were due to radiation injury. The casualty incidence at Nagasaki was much lower than at Hiroshima which had been bombed only four days before. The difference is credited to some slight measure of preparedness. Currently it is held that with reasonable education and organization the total number of casualties could be reduced by 25 per cent. Complete preparedness could be expected to reduce casualties

to 10 per cent of that experienced in Japan.

In warfare, the first responsibility of the individual should be his or her personal protection. Protective clothing is helpful and respirators would be essential for workers, particularly after low-burst explosions. If warnings permit, each individual should seek cover to protect against blast and flying missiles, flash burning and "fall-out" contamination. If no warning is given, cover should be taken when the flash of the explosion is seen as there is a lag of a few seconds between the flash and the impact. Do not eat, drink, smoke or chew while in a contaminated area as these actions may lead to ingestion of activated dusts. Remain under cover for at least four hours, then report to decontamination centers.

Organized groups of workers should be equipped with badges to indicate the amount of radiation they have received. They would care for casualties and monitor the contaminated area to map and mark the radiation concentrations present. Everyone should report to a decontamination center as soon as possible after the explosion since contamination does not show immediate effects in many cases. Casualties suffering from high dosages of radiation will require blood transfusions but may not be aware of their condition. Transient sickness or nausea may follow within two or three days and is followed by an apparent recovery which ends in serious illness.

Toronto and Vancouver have definite plans for civil defence action to protect their people if and when required. Many other cities have plans under way or are preparing to formulate plans. Seattle recently staged a mock atomic raid which proved to iron out many weaknesses in their protective organization and to stimulate wide interest in the problem. We could be in the front line of a third world war. It is our own responsibility to ensure that we can protect ourselves from its ravages.



[Bob Long photos]

These blue whales, taken off the coast of British Columbia, weigh up to 78 tons, and measure an approximate 78 feet in length.

FIELD



There is still considerable crop cut and stooked for the separator. It is to be hoped that some of the late crop will ripen in time this year.

Control of Wild Oats

Constant vigilance, timeliness and persistent effort are the price of success

MOST farmers in the prairie provinces would probably agree that wild oats can be accepted as the No. One weed. There are weeds that are more difficult to kill, but very few which are as difficult to eliminate. Moreover, the wild oat is the most widespread of bad weeds, and were it not for this fact, some of the deep-rooted perennials would take top place as causes of economic loss.

Several factors make the wild oat a continuing problem for the careful farmer. Among these are: (1) Under reasonably favorable conditions the seed will remain in the soil for years and will then germinate if transferred to the surface where temperature conditions are suitable. (2) The seeds at the tops of the spikes ripen, as a rule, before those lower down, so that ripening and shattering continue over a lengthy period. This means that if wild oats are cut more than a few days after emergence of the heads they will mature seeds that will germinate. (3) Summerfallowing, which is considered essential in the prairie provinces for the conservation of moisture, sometimes provides poor control for wild oats. One reason is that if, during cultivation, wild oat plants are cut into two pieces before they reach a height of about five inches, both pieces may strike root and produce two plants instead of one. Furthermore, the hot weather of the summer months is not conducive to the germination of the wild oat seeds, which ordinarily do not germinate when the temperature is above 50° F. (4) Not only because of free seeding and continuous shattering, but also because the seed is difficult to clean from other grain and carries a hooked awn by which it readily attaches itself to clothing or the tiniest projection, the wild oat is very easily and very widely distributed. (5) None of the selective chemical weed killers so far evolved is effective as a control measure in growing crops.

Up to the present time no satisfactory method of controlling wild oats, which is at the same time eco-

nomical, has been evolved. In areas where four to five-year rotations, involving two or more years of grass or legumes, are suitable, wild oats as a rule are not a serious problem on well-managed farms. The weed becomes most troublesome in specialized grain areas, so characteristic of the prairie provinces, where grain and fallow alternate. Here, the best method which seems to have been evolved so far is to "grow" them out. Success lies in getting the wild oats to germinate and then killing successive crops by cultivation or frost.

To say this, however, is not enough, because, as with the control of any other weed or pest, it is necessary to consider its life history and attack it at its weakest points. For example, wild oats will often go through a whole season without germinating, though they may be within germinating distance of the surface. A reason for this has been suggested. It is that when the seed drops from the plant it contains a fairly high percentage of moisture and must go through a process of "after-ripening" before it will germinate. If we add to this the fact that the seed does not ordinarily germinate in high temperatures, a somewhat logical explanation appears as the reason why wild oats will germinate in the fall, if there is sufficient moisture, or in the early spring before it is essential to seed the grain crop. There appear to be two periods, then, when wild oats can be best grown out; one is in the fall and the other is early spring.

The timing of fall cultivation is important. Cultivation immediately after the binder or combine is not recommended because the wild oat seeds will not have gone through the after-ripening process. They should lie on the surface for a considerable period, and if the field is cultivated not long before freeze-up, they may germinate in the fall under favorable weather conditions and be killed by the frost. If not, vigorous early spring growth will appear, and prompt attention in the spring may permit killing



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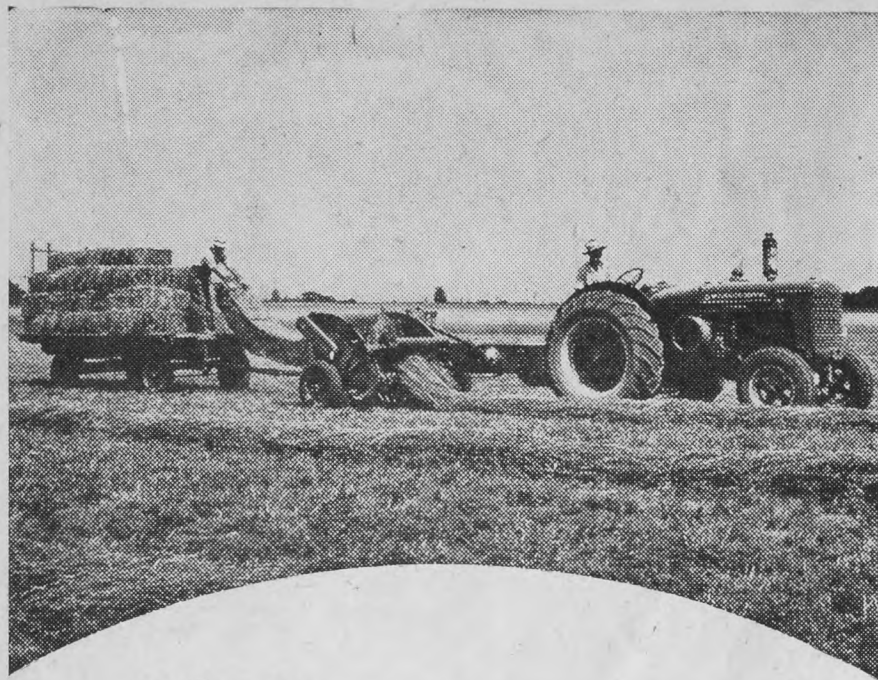


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several crops of wild oats before it is necessary to seed. Delayed wheat seeding tends to invite lower yields, and perhaps frost injury at the end of the season. A short-season crop, such as green feed or Olli barley, recommended in some areas, permits more wild oats to be killed in the spring and the green feed or barley crop to be harvested before any wild oats ripen. Shallow cultivation is essential for the thorough killing of wild oats and, if the grain is seeded around June 1 with a fertilizer, and about four days after the last cultivation, the crop will be given an appreciable start. It has been found helpful to use a cable or a rod weeder or even a duck-foot cultivator, four or five days after the crop is seeded, or when the sprouts on the kernels are about a quarter of an inch long.

At the Experimental Station at Melfort, Sask., studies made over a 10-year period seem to indicate that strong competition for wild oats, provided by heavy seeding of grain together with the use of fertilizers, is helpful. Oats seemed to have the greatest smothering effect, with barley next, and wheat less effective than either. At the Illustration Station at Tisdale, Sask., a fallow wheat rotation actually doubled the wild oats infestation from 12.5 to 25.5 per cent. Another rotation lasting five years enabled the infestation to be reduced to .3 per cent.

Parkland Rotations

LONGER rotations are more suitable on the edge of the prairie area and in the park and bush land than on the open prairie where weeds and moisture conservation are the primary considerations. In this way it is possible to use the land more advantageously. H. W. Leggett of the Dominion Experimental Station, Lacombe, points out that experience at this station provides a classic example of the fact that in the park and bush areas, straight grain rotations are not as profitable as mixed farming rotations. There, a three-year straight grain rotation was practised on one small area for 36 years and showed an average wheat yield, after fallow, of 23.4 bushels per acre. On another area a seven-year mixed farming rotation over a 27-year period averaged 34.4 bushels per acre of wheat after fallow. This 11 bushels per acre difference meant an increase in yield of grain of 47 per cent every year. At the same time, a fairly high level of fertility and control of weeds, insect pests and plant diseases, is maintained more satisfactorily than is usually possible with straight grain rotations. Such a result is worth the effort of any farmer to develop a balanced system of farming and a planned crop rotation.

Seeding Forage Crops

THERE are two different periods in the fall when forage crops can be seeded—in the early fall, August 20 to September 10, and the late fall, after October 20. If seeding is done in the early fall, the grass normally makes enough growth to withstand the winter frost, whereas if it is seeded in the late fall it lies dormant through the winter, and germinates in the spring. The period between September 10 and October 20 is a poor time for planting forage crops as the seedlings do not get enough growth to successfully withstand the winter frosts.

Early fall seeding should not be undertaken if the soil surface is dry, or if grasshoppers are feeding extensively. It is desirable if seeding at this time to have a good seed bed—firm summerfallow or clean stubble. The late fall is the favored time to seed forage crops. Weed-covered abandoned land should always be seeded at this time rather than in the spring or early fall, and it is the best time of the year in which to seed stubble.

The Dominion Experimental Station, Swift Current, Saskatchewan, points out that the choice of forage crops in the dry land area is extremely limited. Only crested wheat grass, brome grass, and slender wheat grass are recommended. The latter is short-lived, but it will frequently yield well for three years after seeding. Alfalfa can be used in mixture with any of these grasses, but it should be seeded either in the late fall or early spring. Sweet clover on the other hand is very sensitive to frost when it is in the seedling stage, and it should always be seeded in the spring.

Large sloughs on the farm can frequently be seeded to advantage, but the only grass that should be used is Reed Canary grass. This grass will withstand many weeks of flooding and produce a good yield of palatable hay. The seed bed should be well prepared and the seed put into the ground in the late fall. It is important that the seed be covered with soil so that it is anchored, as otherwise it will float up and be washed to the edges of the slough in the spring, and a good stand will not be gained. If seeded correctly the grass will come up the next spring after the water dries off.

In attempting to get good stands of forage crops it is accepted practice to seed at a depth of one-half to one inch. It is well to plug every other run in the drill so that the seed is in rows 12 inches apart.

Canada Thistle Control

IN spite of the fact that Canada thistle is one of our very bad weeds, it is possible to completely rid fields of this pest. However, unless reinfestation is guarded against, there is not much use in attempting to get rid of it. This means that plants growing in waste places, and along fence lines, must also be controlled, normally by cutting as soon as the buds are well formed, and grain containing thistle seed must be cleaned before being fed to poultry or other livestock. At the same time, manure that is to be spread on the fields, should be allowed to rot enough to kill the weed seeds.

C. E. Jeffery, Experimental Station, Saanichton, B.C., advises early plowing of heavy soils that are inclined to bake. On lighter, more friable soils, it is well to delay plowing until the plants are in the bud stage. Working down can be done with a spring tooth harrow. To clear the weed out of the field, this treatment can be followed by cultivating with a broad, sharp-toothed implement, such as a duck foot cultivator at regular intervals of 10 days, or sooner if plants begin to appear above the surface. When it gets on into July, less cultivation will be required.

In areas where they will grow, it is recommended that the fields concerned should be seeded to winter

wheat, Austrian winter peas and vetch, at the ratio of 60:30:20, at two bushels per acre, in order to prevent erosion. Seeding should be done at the end of September. In the spring, plow down the cover crop and follow it with a hoe crop, preferably potatoes, and thistles that appear in the second year can be dealt with individually.

Winter Wheat Comparisons

OF the three varieties of winter wheat commonly grown in southern Alberta, Kharakov and Yogo have been found more winter hardy than Jones Fife. Kharakov is slightly more hardy than Yogo, and both are a great deal hardier than Jones Fife. Kharakov and Yogo were also found in experiments at the Dominion Experimental Station, Lethbridge, Alberta, to outyield Jones Fife to a slight extent. On the other hand, Yogo, which is good in the other factors, was found to have rather less straw strength than either of the other varieties. At the same time, Yogo was highly resistant to shattering. Kharakov shattered to some extent, and Jones Fife shattered badly. Experiments revealed bunt (covered smut) resistance in Yogo, while the other varieties were quite susceptible.

Jones Fife is a semi-soft red wheat, that produces poor quality flour for either bread or pastry, and there does not appear to be any place where its growing can be fully justified. Kharakov and Yogo are hard red winter wheats that produce a flour suitable for bread-making. This, coupled with their other attributes, suggests that Yogo is likely to be the most suitable variety for the drier areas, because of its resistance to shattering and bunt, while Kharakov appears suitable for the moister areas where its straw strength is important.

How Much Water for Crops

SOME time ago scientists developed equipment for testing the moisture content of soils at varying depths below the surface. This equipment consists of small blocks of plaster of paris. Each block has two electric wires embedded in it, about three-quarters of an inch apart. The block is then buried in the soil, at the desired depth, with connections leading to the surface. The moisture in the blocks of plaster of paris increases or decreases with the moisture in the surrounding soil. When the soil moisture is high, the electrical resistance of the blocks is low, and the resistance is high when the soil moisture is low.

Normally, in soils of good structure and fine texture, crops will begin to wilt when the resistance is some 60,000 to 80,000 ohms. Research workers at the University of Wisconsin have found that these blocks have great promise in deciding when irrigation aids crops. This would mean varying blocks of plaster of paris in enough places in a field, so that no known part need lack for surface moisture. Furthermore, these researchers have found that the system can be used for irrigation purposes merely to save crops against failure, or to guarantee full irrigation so that the crop will never lack enough moisture for maximum growth.

They have found also that they can determine from the blocks at what depth the plant gets its moisture. They have found that corn and

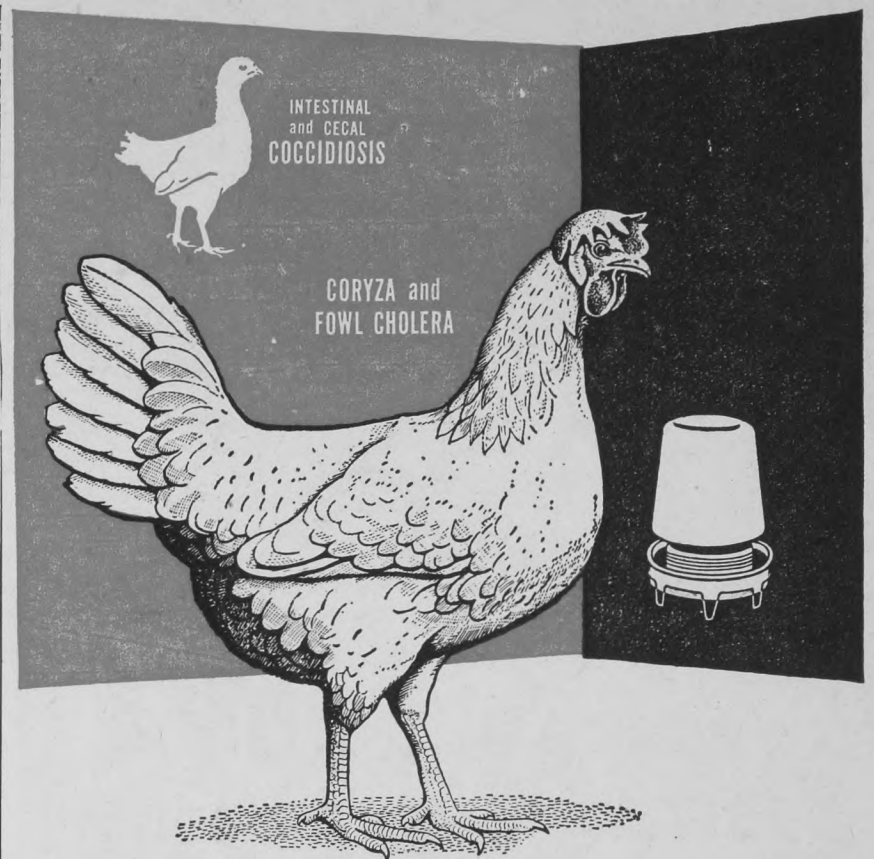
tobacco, for example, get water largely from a depth of six to 20 inches in a heavy soil, and from six to 30 inches in a very light soil. Potatoes take most water from within five or six inches of the seed-piece position. Alfalfa takes a little more water earlier in the season from a depth of four to 20 inches but later on uses just as much water at 36-inches depth. No blocks were buried in Wisconsin deeper than 36 inches.

Significant in the moisture supply of soils is the fact that if plants are to get a good supply of food, both water and nutrients must be present where the roots are feeding. All nutrients must be dissolved in water. It might be that alfalfa could get all the moisture it needs from a depth of three feet, but the nutrients are seldom available at this depth.

Crops may wilt during the hot summer even though there is plenty of water where the deeper roots are feeding. When this happens, it is because the soil is dry where the maximum feeding roots are located. The size of the pore spaces in the soil also determines the amount of moisture a plant can take, as well as the speed with which water will travel through the soil. In light or sandy soil, the pores are large and the water in them is held more loosely. In loams and clays, the pores are quite small and the plant must work harder to get the water from them. In other words, plants may wilt on clay or loam soil, when they will not wilt on sandy soil, simply because the heavier soils hold the water more tightly.

The plant roots cannot reach any soil water except that which they touch. This soil then becomes drier and acts as a poor wick, able to bring water from no more than one-eighth to a quarter inch away, unless it is near a water table. This movement of water in the soil also depends somewhat on the texture of the soil. If the texture is light, the film of moisture around the soil particles near the plant roots becomes thin very quickly, and the thinner the film of water, the more slowly the water from surrounding areas will travel the necessary eighth or quarter of an inch to the dry area where the root is feeding. In heavier soils the pores are smaller and there are more channels through which the water may move. Consequently, more water can move through these soils.

Another very important discovery by these research workers was that in a very fertile soil, the crop usually needs less moisture early in the season but more later on. When the fertility and moisture are both excellent, the plant grows vigorously and thus needs more moisture later in the season, just because it is bigger. It may be that a well-fertilized crop will grow well early in the season, but fail to do well later in the season. This is not the fault of the fertilizer, if the water supply is low later on, because the fertilizer must be dissolved in the water of the soil before it can be used by the plant. The Wisconsin people found, in some corn fertilizer trials, that on a sandy loam soil no fertilizer at all, or only a medium amount, gave higher yields than a heavy application. The reason was that the heavily fertilized corn was not able to get enough water during a drought later in the season to complete what it had started earlier.



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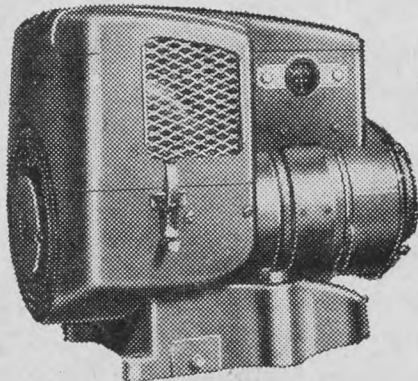


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Breeding Barley

Continued from page 11

interested in barley breeding.

Mr. Johnston has been most active in barley breeding for a considerable period of time. He did the work that led to the development of Vantage barley, and he did the final selections on Plush. At the present time Johnston at Brandon and J. E. Andrews at the Dominion Laboratory of Cereal Breeding do the early selection work, crossing, breeding and the handling of material in the early generations in the joint project. At Brandon Johnston is assisted in this work by R. Metcalfe, a recent graduate of the University of Manitoba.

The experimental stations carry on yield tests, and further selections and evaluation of strains being developed. Dr. T. Johnson of the Laboratory of Plant Pathology attends to stem and leaf rust readings, and produces rust inoculum with which growing plants are infected to make an artificial rust epidemic. W. Cherewick of the same laboratory does special work on the study of smuts, and W. O. S. Meredith of the Grain Research Laboratory of the Board of Grain Commissioners makes malting tests on any variety that may be developed. An imposing list of specialists have some hand in the final product.

THE work discussed so far is being done by Dominion Government scientists. Work is being done at the universities also, and this, of course, is under the aegis of the provincial government concerned. The work at the University of Manitoba was carried on for many years by Dr. P. J. Olson, head of the Plant Science Department, but has been taken over for the last couple of years by Professor S. B. Helgason of the same department. At the University of Saskatchewan plant breeding is under the direction of Dr. J. B. Harrington, head of the Field Husbandry Department, and at the University of Alberta it is directed by Dr. A. G. McCalla, head of the Plant Science Department.

The work at the University of Manitoba is, perhaps, generally typical of the work that has been going on at the other prairie universities. Twenty years ago the Plant Science Department was concerned with improving the yield of O.A.C. 21. At that time this variety was the recognized variety, and it was crossed with other heavier yielders, most notable among which was Trebi, with the object of developing a heavier yielding variety of equal quality. In 1937 Dr. P. J. Olson took over the department and continued this work, with the added objective of achieving rust resistance. In this attempt, crosses were made with Peatland, and some progress was made. However, in 1944 Montcalm was developed at Macdonald College, Quebec, and most of the hybrids under test did not seem likely to be able to compete with this new variety, which was a good malting variety, a heavy yielder and had smooth awns.

Discussion with Professor Helgason revealed, as discussion with any other plant breeder would no doubt reveal, that the breeding of new varieties is not as simple as it might appear to the uninitiated. For one thing there are many features that farmers want to see in new varieties. They are asking

for a stronger strawed variety, because they often want to grow malting barley on summerfallow. Naturally they want stem rust resistance, and they also want resistance to smut. Most farmers want a smooth-awned barley.

If, to these desired features, one adds the features that are looked for by the malting industry, the result represents an objective of substantial proportions for the breeder of malting barleys. He must look for all of the features desired by farmers. He must also breed for a barley with a low nitrogen content, one from which a large amount of extract is obtainable, one with adequate diastatic activity, and, ideally, one in which the hull is not only tight but also quite thin. To produce all of these, combined in one variety, adds up to a long and often arduous task.

An example will serve to illustrate some of the problems. Montcalm has good quality and high yield, and Titan has the resistance to smut and straw strength which is lacking in Montcalm. These two were, therefore, crossed about five years ago at the University of Manitoba, in the hope of combining the desirable qualities of both. Pure line selections have been made and progress has been achieved, but rust resistance is still lacking so that another cross must be made and further selections made in an effort to achieve this essential quality. Before a variety is likely to be released, many years of work and much careful thought will have been expended.

THE actual procedure that goes into the testing and breeding that leads to a new variety extends over a period of several years. In the first year the parents are chosen and a cross is made. If a greenhouse is available the seed from this hybrid is frequently grown indoors, and as many seeds as possible produced. All of the seeds raised in this manner are saved and are planted in the field in the second year. Individual seeds are spaced two or three inches apart, because the progeny of this first generation will break up into types, each plant having its characteristic appearance and qualities and at harvest time it is necessary to carefully study each plant so that only the desirable ones can be kept. If the plant breeder were breeding especially for smut or rust resistance he would inoculate the plants with these diseases in this year to see which of the plants gave evidence of resistance.

The seeds from the individual plants are kept separate, and in the third year the seeds from each selected plant are sown in a separate row. Plants lacking the desired characteristics are discarded and those that show promise are carried for the next three years in so-called "bulk" lines. During this period these bulk lines will break up into types, and by the sixth year the plants will have settled down into their individual types. Therefore, in the spring of the sixth year the seeds from the bulk lots are space-planted two or three inches apart so that individual plants will be clearly marked, and once more the plant breeder goes through the selection process. These selections are the ones that will finally lead to individual varieties. From the original cross there may at this time be anywhere from 500 to 1,500 selections

made. The actual number is likely to depend on the number of characters for which selection is being made.

In the seventh year the progeny of these individual plants are seeded in rows and are carefully studied for the characteristics for which selection is being made. In this generation a test is run for nitrogen to determine malting quality. If, for instance, a rust-resistant variety is sought, an epidemic is created artificially by inoculating the growing plant with the rust spores. Further extensive tests are made in the eighth year. Yield tests are made as well as a quality test, a prediction malting test and tests to determine how well the variety would stand up.

In the ninth and subsequent years the breeder runs fairly extensive yield trials and reduces the large number of selections to a dozen or fewer lines. These few lines are put into tests in different areas on the farms of owners who are willing to co-operate, and the

tests are generally run for two or three years.

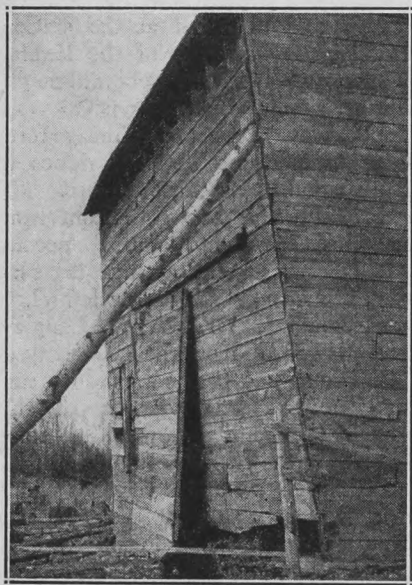
IF the line passes all tests up to this time, it is entered in the western section of the national barley test, which means that it is tested at all the experimental stations and universities in the western provinces. If it passes successfully through this co-operative crop-testing plan it can be presented for approval to the National Barley Committee. If approval is given there it will be presented to the Dominion Cerealists for licensing. Until such time as it is licensed, it cannot be released to farmers or for commercial sale anywhere in Canada.

It is not likely that all plant breeders follow this exact procedure, but the outline does give some idea of the time and effort necessary to improve cereal crop varieties. This is the type of work that has produced O.A.C. 21, Montcalm and other barley varieties. It will, without question, produce more and better varieties in the future.

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MANY new types of nails are finding their places in the building trade; each new type has its specific value and use. Some are made with tiny barbs for greater holding power, others are coated or etched for the same reason. A variety of metals are used as basic materials for nails; steel, copper, bronze, brass and stainless steel are all being used to prevent corrosion under peculiar circumstances. One of the most striking developments has been the introduction of double-headed nails for use in temporary forms and scaffolds. Many factors must be considered in choosing the right nail for each job to be done.



Poor selection of nails, bracing or framing can be responsible for this.

1. Wood will not split if the proper nail is used in it. The shape of the point and gauge and length of the shank must all be compared with the thickness, type and condition of the wood.

2. Nails are sold by the pound, so lighter gauges and shorter lengths may provide economy if they are not required in greater numbers.

3. Dry wood has greater holding power than green wood.

4. Green, moist wood has tem-

porary holding power which decreases as the wood dries.

5. The holding power of well-seasoned wood increases with time. This is particularly noticeable in softer woods.

6. Distortion of the wood fibres by the nail will cause decreased holding power. The point of the nail is the chief disturber of the fibres. Blunt points penetrate the wood with less tendency to cause splitting; they do distort the fibres in the deeper layers however. In contrast, sharp points tend to split the wood, particularly the more dense hardwoods. The common nails with moderately sharp points distort the fibres least and cause only moderate splitting. Lightweight woods which do not split easily should be nailed with sharp pointed nails. Denser woods should be nailed with a blunt tapered nail.

7. Large, long nails have greater holding power if they don't cause splitting.

8. Odd shaped nail shanks are expensive to manufacture but give greater binding surface per pound of nails used. The shanks may be barbed, grooved, spiralled, square or triangular in shape.

9. Cement coated nails have nearly doubled holding capacity in soft woods. Coating has little or no advantage in hardwoods.

10. Acid etched nails have about 200 per cent greater holding capacity in softer woods and from 90 to 175 per cent greater holding capacity in hardwoods.

11. Zinc coated nails are used to prevent corrosion. Evenly coated nails have about the same holding power as plain nails but irregularities in the coating decrease their value below that of plain nails.

12. Drilled holes should have slightly smaller diameter than the nail and will increase the holding power while decreasing the tendency to split.

The use of the most suitable nails for each job will provide building economies in spite of the fact that special types cost more per pound.

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HORTICULTURE



Many fruits are bearing well this year in keeping with the native Saskatoon on the prairies, but the crop of tree fruits in B.C. will be seriously decreased as the result of winter injury.

Great Plains Horticulturists Meet

Briefs from the work of the University of Minnesota in the field of horticulture

by E. T. ANDERSEN, University of Manitoba

THE 1950 meetings of the Great Plains Section of the American Society for Horticultural Science were held at the University of Minnesota, St. Paul, on August 14, 15 and 16. The staff of this renowned center of horticultural research, under Chief W. H. Alderman, have always much to show and tell their fellow horticulturists. Attending the meeting from Canada were: M. B. Davis, Dominion Horticulturist and President of the Society for 1949-50; L. P. Spangelo, Fruit Breeder, Central Experimental Farm; Wm. Cumming of Skinner's Nursery, Dropmore; W. R. Leslie, Superintendent, and C. Walkof (vegetable research), Morden Experimental Station, and the writer.

It would be impossible in the space of this brief article to give a fair account of even a small portion of the vast amount of interesting horticultural experiments which were demonstrated to the society. Only a few items will be touched on.

The first morning was devoted to a review of the vegetable work. Potato breeding, under Dr. F. A. Krautz, has been in progress for over 25 years with several new varieties introduced, some of which, like Warba and Red Warba, have become popular on our Canadian prairies. Early, shallow-eyed varieties with scab and late-blight resistance are sought for conditions similar to our own.

In tomatoes, cucumbers, asparagus and squash, emphasis is being placed on hybrid varieties to take advantage of the increased vigor thus obtained. The Fariho hybrid cucumber is a result of this breeding and new, improved varieties of the other vegetables should soon be available for general culture.

Much chemical weed control work is being conducted by Dr. R. E. Nylund, particularly on onions. Potassium cyanate, a product sold under the trade name of Aero Cyanate, showed real promise as a selective

weedicide for onions. This material gave good control of annual weeds with no injury to small onion seedlings.

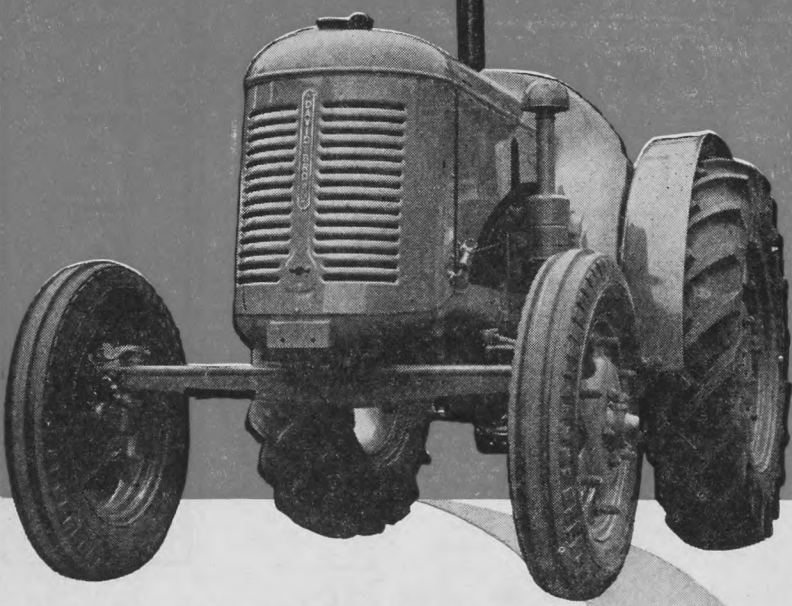
A full day was very profitably spent at the Fruit Breeding Farm in tours and discussions of the extensive work and plantings. Many varieties now widely planted across our prairies originated on this famous breeding station. A few of these are Haralson apple, La Crescent and Underwood plums, Chief and Latham raspberries, Arrowhead and Burgundy strawberries. The performance of these and many other popular varieties was discussed and observed at the station. Haralson is now one of the leading winter apples in Minnesota and neighboring states. The extensive work under way promises to bring forth even harder and better varieties of fruits suitable to prairie culture.

Probably the most significant work in ornamental horticulture accomplished in recent years is the development of hardy garden chrysanthemums. Dr. L. E. Longley, recently retired from the University of Minnesota, has had outstanding success in the improvement of this desirable perennial flower and some of our best varieties are from his breeding. A few of his varieties which are prominent in our gardens are: Harmony, Glacier, Purple Star, Maroon 'n Gold, Butterball and Chipewa. A new variety named "Dr. Longley" promises to be exceptional in the early rose-pink class. This variety is considered the best Minnesota mum introduced to date.

Of interest to the housewife, particularly, is the leading work of Dr. J. D. Winter on methods of packaging and handling foods for quick-freezing. Aluminum foil has been shown to be one of the best wrapping materials for poultry and other meats in preventing freezer-burn. Incidentally, we also learned that this same type of foil has proved effective in wrapping fruit tree stems to prevent mouse in-

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jury in wintertime. In plastic films for freezer packaging, the polyethylene type has given best results. It can be obtained in bag form and is excellent for fruits and vegetables. Such bags are easily sealed by twisting the film and securing with a rubber tie or short piece of wire "Twist-Em."

Tours of neighboring market garden areas and seed firms were found most stimulating. All attending agreed that the meetings had been exceptionally successful.

The Altai Rose Family

IN climates that are moderate to moderately severe, one of the best-loved shrub roses is Father Hugo's rose, species named Hugonis. It produces soft yellow blooms, single, on tall, arching stems.

Dr. Seager Wheeler, formerly of Rosthern, Saskatchewan, for many years grew the Hugonis rose successfully, mostly with the aid of deep snowdrifts. For general practice, the Hugonis rose is not sufficiently hardy in the prairie provinces, and if we want something like it, we must look for a substitute.

The Altai rose, species *altaica*, is a wonderful single-flowered rose in its own right. Its flowers are very large, very numerous, and very beautiful. In full bloom it is an object of striking beauty. Again and again I have had visitors say that they did not like single roses, but when I took them to see the Altai rose in bloom, they would immediately say that it was a rose they wanted. It is one of the hardiest rose species in the world. The cold winter of 1942-43, which saw sixty-seven below zero on my place, did not even cause tip-injury on the Altai rose, or have any discernible effect at all.

The plant is erect growing, and so does not give quite the same effect in the garden as does the plant of the Hugonis rose. There is a hybrid between the two, which the late Dr. J. Horace MacFarland, one of the most famous rosarians of America, kindly sent me. However, there was delay on the way, and the plants unfortunately arrived dried out.

In an attempt to get variations of the Altai rose with flowers of different colors, I crossed the Altai with Harrison's Yellow and with Double Yellow Scotch. Among the progeny is one I call Golden Altai. It seems identical to all intents and purposes with the Altai rose in plant characters, and is

hardy even in severe winters. The flowers, instead of being white, are a delicate shade of cream, with deeper tones of yellow near the centre. I have propagated it so fast that I have never seen any full-size plant, but the small plants are very attractive.

Later, a second variant occurred, a pure yellow, as yellow as Harrison Yellow itself, and extremely floriferous and fruitful. The flower is noticeably smaller than that of the Altai rose, and so is the hip. I believe that this rose will be considered one of the very valuable roses of the prairie provinces as soon as it becomes generally known. Its name is Yellow Altai.

However, nothing with the arching branches of the Hugonis rose has appeared. The Ames Climber, a variety of very different relationship, produces long stems that suggest the climbing type of rose plant, but they can hardly be described as arching. In the meantime, they are easily grown if given snow cover, and the pale pink flowers are very freely produced. In fact, I know of no other rose quite so free in flowering. The flowers appear in sheets of pink, and are of fair size too.

Hybridization of the hardy species roses is just beginning, and one of these days, we may be sure, the arching growth of the Hugonis rose will reappear in something of perfect hardiness. The search for new varieties with particular qualities such as this gives zest to the work of the rose breeder, or, for that matter, to the work of the breeder of any kind of flower or ornamental plant.—Percy H. Wright.

Orchard Fire Hazards

THE mulching of sod in the orchard is most desirable if a good moisture relationship is to be maintained, and competition for moisture and nutrients reduced. Unfortunately, during the past growing season, when it was extremely dry for a period of time, a number of growers lost trees due to flash fires.

In many cases these fires were directly traceable to carelessness or to improper orchard management techniques. Typically, fires occurred in orchards where dry mulch was applied after spring rain, and during the hot summer weather when the mulch itself was already dry so would ignite fairly easily. A preferable procedure is to apply the mulch in late fall so that it becomes wet during the winter and will begin to decompose before there is any chance of fire. This is particularly true if the dry mulch is to be used, and the orchard borders a main highway.

Use of the cuttings of the sod in the orchard serves to improve the texture of the orchard soil and at the same time to eliminate fire hazards. Some supplementary mulch is necessary in order to obtain sufficient mulch bed. Young, immature grass makes an excellent mulch, and at the same time the grass does not draw as much moisture if it is cut frequently, particularly during hot periods. This grass decomposes rapidly, and so reduces the danger of flash fires.

The proper use of mulches will not significantly increase the fire hazard. At the same time it should be apparent to any grower with a mulch orchard that the greatest possible care should attend the use of matches, brush fires or cigarettes, particularly during the hot dry season of the summer.



This tree was killed by fireblight, a bacterial disease favored by damp, humid weather.



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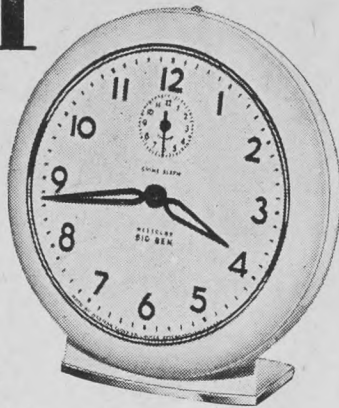
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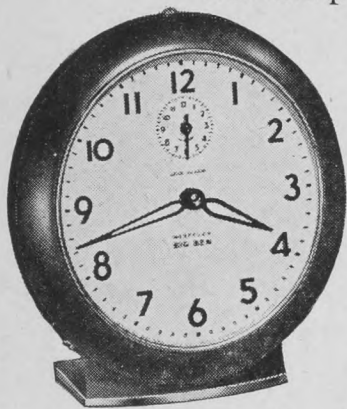
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Indian Summer

*The common belief that frost colors the leaves
gets a going over from the scientists*

by L. T. CARMICHAEL

THE advent of spring each year brings with it nature's favorite color, green. The slender blades of grass on the meadows and roadsides; the unfolding buds on the trees and shrubs; the tender foliage of awakening flowers, are heralds of another season, hopes of better things to come. We love the green in all its myriad shades and hues. It is a color of which the eye never tires—Mother Nature has seen to that.

But when autumn days roll around, the foliage of our trees and shrubs, as if envious of the admiration accorded to brighter hues, bursts forth in flashing attire of red and gold and purple. It is not the swan's song of death but a gala farewell to summer; a joyful reminder that life persists, and that after a period of rest it will awaken again in all its verdant splendor.

What is the real reason for all this display of splendor? How do the trees part with their leaves on the approach of winter?

Deciduous trees and shrubs prepare to drop their foliage by forming a layer of hard-walled cork cells at the base of each leaf. This layer serves to cut off the leaf from the twig or branch on which it grows. Before this layer of cells is formed, most of the food and living substance of the leaf is drawn into the other parts of the plant. Chlorophyll, the vital green granules of the leaf, disappears, making way for the latent yellows and reds.

WE hear much of the work of Jack Frost as he paints the leaves of September and October, yet frost has nothing to do with the change of color. In fact, after a sharp frost, the leaves will wither and die and fall to the ground without beauty or tint. On the other hand, as light is necessary to implant an image on a photographic plate, so is it essential to the production of reds and purples. Continuous cloudy weather will destroy the dis-

play, while an average amount of moisture and sunny autumn days will dress up the trees in all their glory.

Three chemicals, embedded within the cells of the leaf, are responsible for the fall tints. The basic one is xanthophyll, the same true dye that is found in the yolk of an egg. This is entrenched deep in the cells of the spongy layer and gives rise to most of the yellows. It is affected very little by sunlight. These pigments are always present in the cells, but are masked from our sight all summer by the rich green of the chlorophyll. Many leaves, such as the waxy broad ones of the northwestern poplar, the elm and the aspen, contain no other pigment after the disappearance of green.

The reds and purples are due to anthocyanins, water-soluble stains found only in the outer cells of certain leaves. Just as acids turn litmus paper red, so sunlight brings out this color on the surface of the leaf. Often the yellow will shine through the red at the surface, painting it a brilliant orange. The part of a maple or rose, overlapped by another leaf, will be yellow while the exposed portion will become a study in shades of crimson.

The brown color in leaves is due to the presence of tannin. This dye, coupled with the yellow of xanthophyll, gives our green ash its blending shade of bronze and gold.

Poor, rocky acid soils are conducive to bright colors of red and orange. The acids assist the sunlight in bringing to view the latent hues of the anthocyanins. Sugar in sap is another factor especially inductive to reds. The king of Indian summer is the bright sugar maple of the East and a close runner-up is the Ginnala maple which grows on city lawns throughout the West.

It has often been stated that it is essentially death that causes all this brave show, but to the writer it is not good-bye but au revoir.

Controlled Burning

A forestryman's viewpoint

by THELMA CARLETON

"WHAT can you do with jack pine except burn it?" asked a friend of Col. A. Parlow, forester-in-charge at Kamloops, B.C. "And this," says Parlow, "fairly represents the opinion of some otherwise sane people."

In the dusty yards of the occasional sawmill, among picked, choice logs of fir, yellow pine, spruce, you can now find the lowly lodgepole or jack pine, awaiting the bite of the saw, along with its commercially important cousins.

"In not a few timber sales," says Col. Parlow, "it has brought the same price as Douglas fir."

Keeping a watchful eye on the timbered hills, the forestry department still frowns on the idea of fire through the green trees, but they are taking part in experiments, working with the Dominion Range Experiment Station, the Game Branch, Water Rights, and the Dominion Entomological and Pathological services in the

hope of reaching a practical solution concerning controlled burning.

Pointing out the pitfalls that could turn controlled and supervised burning into disadvantages and disappointments, Col. Parlow says, that in parts of the stock lands of the Cariboo and Chilcotin there is a widespread idea that trees are of little or no value, and never will be, and if they are burned off, there will be miles and miles of rich grass land.

"Unfortunately," he continued, "things are not so simple as that. There is no royal road."

Each year for at least two generations, fires have been set in B.C. timber in the hope of creating range land, and the one outstanding, inescapable result is the windfall problem.

Then there is hope that another fire will fix the windfalls.

"A considerable weight of opinion holds," says Col. Parlow, "that fire, which in its nature destroys whatever life and organic matter it touches, if

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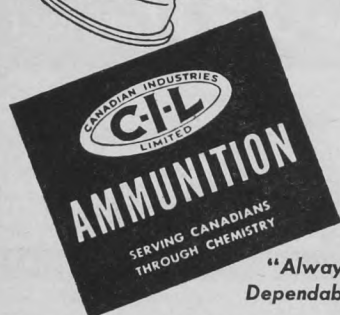




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applied to timber-covered land enough to kill and remove the timber cover, will destroy the humus, and leave a barren waste. One thing is certain, that if there is no feed under the timber, fire will not produce it there, and after the burn, the good forage plants will have to be introduced to the area."

So far there are just experiments, and little on record as to what results the supervised burns are producing.

The program, however, includes some interesting points.

AT Watching Creek, near Kamloops, there is a large area of lodgepole pine and poplar. Can this be converted to good range? Six separate services are working in conjunction with one another to find out if it is feasible and the best approach.

The Range Experiment Station wants 600 additional acres of good range close to its present set-up at Pass Lake. The plan is to make three separate burns, seed a portion of each with grasses and study the natural regeneration of the balance.

On the property of Mr. Reideman, Alkali Lake, young pine seedlings began springing up on the range by seeds cast out from the timberlands that sweep down to the range borders. The range was fired in the spring of 1949 and the results of this several-hundred acre burn along with smaller burned areas, are being studied.

Results of all the experiments will be recorded over a period of years, of the effect of the burns and reseeded, on forage values, snow-level, water run-off, game, costs, etc.

But how to dispose of the windfalls resulting from the fires? That is still a major problem and no practical, sound solution has yet been found.

"Anyone familiar with the Cariboo and Chilcotin," says Col. Parlow, "can see for himself, that great numbers of fires set each year, with the idea of making range, have been set with no intelligence at all, and the result has been miles of tangled windfall in which no cow beast or horse can feed."

Repeated burns of the windfalls have produced lodgepole pine of about which Col. Parlow was asked, "What can you do with it except burn it?"

If this is the case, it would seem that the services involved in the experiments will have to exercise a great deal of ingenuity to find a way clear through this aggravating circle of events.

THERE is also the point raised that if the burns are near fishing spots, they will be like black scars, ruining the beauty of the jewel-like lakes scattered throughout the virgin interior. Some believe that this would be a shame, for the fighting Kamloops trout, they say, bring more tourists to B.C. than any of the arrogant wild game birds.

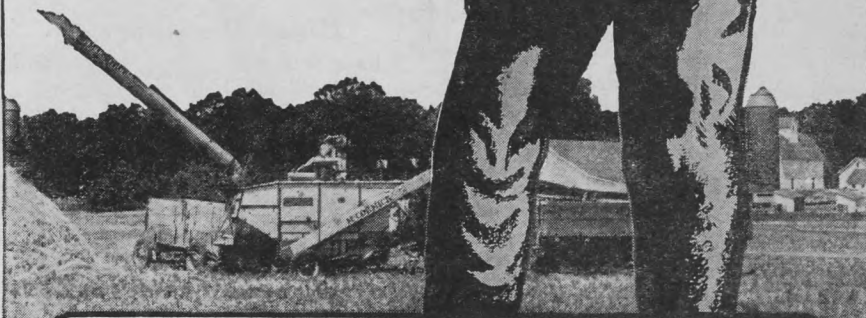
And tourists bring dollars!

Can B.C. successfully farm her wild life as a rancher would tend to his domesticated stock, making supervised meadows in the heart of the green timbers, where there is at present not sufficient forage?

Can she successfully burn back the forests that encroach on her cattle range and reduce windfall problems to a minimum?

Should, or should not, controlled burning be put into effect? That is what B.C. would like to know.

"They're 'tops' for clean, thorough threshing"



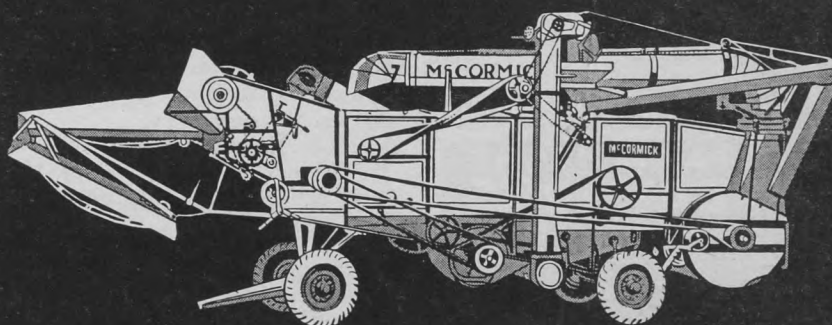
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Hints that have proven to be valuable to others

Homemade Bushings

It pays to save even the short ends of conduit and water pipe. I use them in my spare time to make bushings. These are often required to bush wagon and sleigh eveners, king pin holes and holes for box rods. The pipe should be about one inch longer than the material to be bushed. Make about four cuts in the ends, each about one-half-inch deep. Slide two washers over the pipe and bend up the strips of one end. When the bushing is to be installed remove one washer, insert the bushing, place the washer back on and bend out the strips on the other end. Holes which are thus protected will give many times the usual amount of wear.—R.M.C.

HACKSAW BOTH ENDS
OF PIECE OF WATER PIPE

WASHERS

BEND ONE END OF PIPE,
INSERT WASHER, BUSHING
AND SECOND WASHER,
AND BEND OTHER END.

WASHERS

BEND ONE END OF PIPE,
INSERT WASHER, BUSHING
AND SECOND WASHER,
AND BEND OTHER END.

WASHERS

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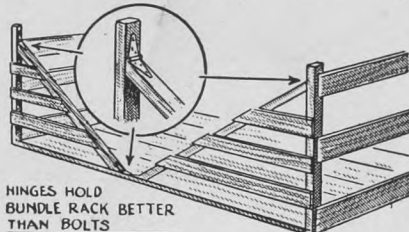
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WASHERS

BEND ONE END OF PIPE,
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AND BEND OTHER END.

Hinge Fastenings

I have found that strap hinges and ¼-inch bolts will hold the sides of a hay rack more solidly than do large



bolts. The hinges allow the bolt holes to be drilled through the corner pieces and side braces at right angles. When they are drawn up tight they will not shake loose.—A.B.

Turns Away Sparrows

In some granaries and barns the birds spoil a lot of feed with their droppings. To turn them away, smear the tops of hay tracks and rafters with a liberal coating of creosote. The birds will not come near it.—J.L.K.

Greasing Wagon Wheels

To eliminate the tedious job of removing wagon wheels to grease them, fit the hubs with zerk or ale-mite fittings and use the grease gun. Holes can be drilled and tapped on the inside of the hub of steel wheels. For wooden wheels, drill the hub then insert a short steel pipe which has been tapped to take the fitting. Drive the pipe home firmly to prevent it from working loose.—J.W.



Sack Filling

Most farms have some discarded, bottomless pails; they can be used conveniently to hold open sacks which are to be filled. When two men are available, one can easily hold the sack and pail while the other shovels. The process can be made a one-man job by hanging the pail on a hook or peg and pulling the sack well up over the lip of the pail.—W.F.S.

PEG ON WALL
SUPPORTS PAIL

PEG ON WALL
SUPPORTS PAIL

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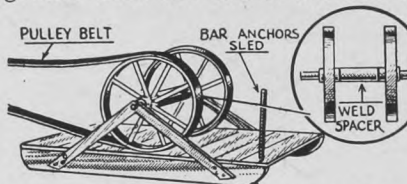
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Fence Wire Reel

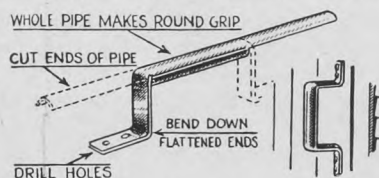
This reel is particularly suitable for handling large quantities of fence wire. It is made by placing two steel truck wagon wheels on an axle and spacing them about two feet apart. The axle is carried on two-by-four-inch braces, mounted on a sled. The spacer between the wheels should be welded in place and should be about six inches in diameter or the size of the wheel hubs. In use, the sled is anchored or held with a bar in the ground while one end of the wire to



be rolled is fastened to a wheel spoke. A belt from the tractor pulley is run around one of the wheels and the tractor engine is run at idling speed. This reel will handle one mile of standard barbed wire with ease. To lay out the wire in a new location, anchor the outside end then draw the sled along the fence row and let the wire roll out.—J.W.H.

Solid Door Handles

Handles for heavy doors can be made from pieces of scrap metal pipe. Mark the pipe in three equal sections and saw half way through at the marks. Cut out the bottom half of the pipe at each end, then flatten the ends and bend them as shown. Drill two



bolt holes in each end piece for solid fastening to the door. The size of pipe, length of pipe and size of the holes drilled will be determined by what material is available and by the size and weight of the door.—J.R.E.

Preserving Wooden Handles

New fork, axe and shovel handles, etc., are often dry and brittle. Before they are used they should be treated with oil. To do the job the ends can often be drilled out with a small bit in the brace. Drill the full length of the bit into the center of the handle then fill the hole with light oil and seal it over or plug it. Handles with ferrules should have the tools removed, the ferrules filled with oil, and should then be left standing for a week before they are reassembled for work.—A.McC.

Water Tank Gauge

When a tank or automatic waterer is some distance from the pump or water valve, it is often difficult to prevent overflows without making a lot of extra trips to check the level. A simple gauge can be made by sealing a small, empty can to make it airtight. Allow it to float on the surface of the water and it will ride high enough to indicate when the tank is nearly full.—L.A.

SEALED CAN IN TANK
MAKES GOOD INDICATOR

SEALED CAN IN TANK
MAKES GOOD INDICATOR

SEALED CAN IN TANK
MAKES GOOD INDICATOR

SEALED CAN IN TANK
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MAKES GOOD INDICATOR

"I can't afford
to have my
horse laid up"



says Norwood Andrews
of Moorestown, N. J.

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FOR ANY WOOD
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MASTIC GLAZE

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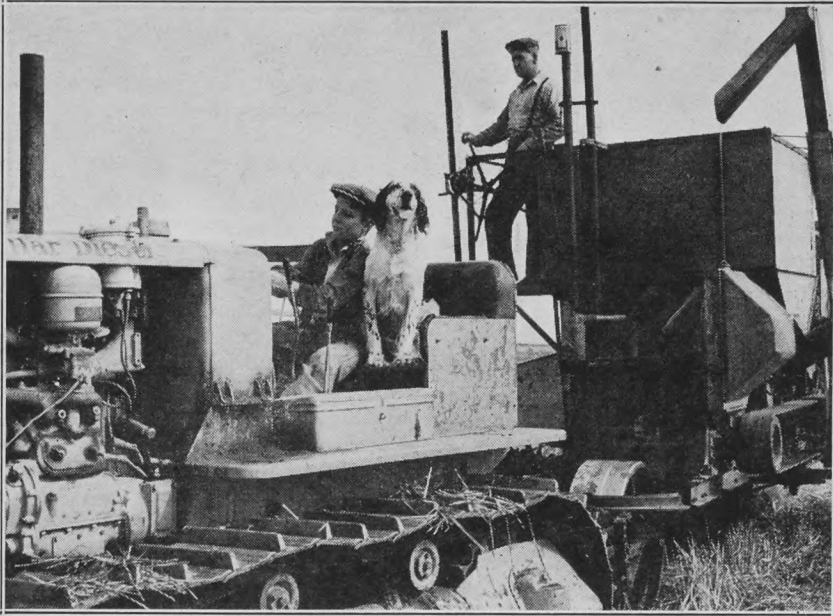


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FARM YOUNG PEOPLE



This young chap is doing a man's job in the harvest.

Public Speaking Competition

ONE of the outstanding features of this year's program of junior club work in Manitoba was the public speaking competition sponsored by the Winnipeg Kiwanis Club in co-operation with the Manitoba Extension Service. This opinion was expressed by W. S. Frazer, Assistant Director, Extension Service, Manitoba Department of Agriculture.

Each contestant was required to speak of some phase of conservation. Joan Hopkins won the competition speaking on the subject "Conservation of Youth." Second and third positions were taken by Wilda Abercrombie and Ann Jespersen, speaking respectively on "Soil Conservation" and "Health—Our Greatest Natural Resource." Eight district finalists took part in the elimination which was held in Winnipeg. The three winners spoke in final competition at the regular Kiwanis noon luncheon on the following day.

Public speaking in junior club work is also receiving some prominence at Kamloops, B.C. Jack Gray, the local agricultural representative, has found some difficulty in maintaining variety and originality in local meetings—a problem common to all club work. He and the local leader have a tape recording machine loaned to them by a local radio station, and during meetings of the club, instruction is given on microphone technique. This is followed by individual recordings and these are played back with constructive comments by Mr. Gray. This is very popular at the meetings, and at the same time provides the young members with an excellent opportunity to learn to express themselves capably on their feet, a matter always of importance.

Assistance To Students

DURING the fiscal year, ending March 31, 1950, financial assistance by grant or loan was provided to 2,152 university students and 589 nurses in training. This assistance was provided by the provincial and Dominion governments. Those students who were assisted would otherwise have been unable to continue their courses, although they had proven themselves to be capable students. Assistance took the forms of grant or loan, or in some cases a combination of both.

During the past 11 years these grants and loans to needy students have reached the surprising total of \$4,517,000. Dominion contributions accounted for about 34 per cent of this total—approximately \$900,000 in outright grants, and \$670,000 in loans. The provinces made approximately \$3,000,000 available, outright grants amounting to \$2,000,000 and loans \$1,000,000.

The program is in effect in all provinces with the exception of Newfoundland. It is administered by the provincial departments of education. Selection of eligible students is made in the provinces by a committee consisting of representatives of the Dominion, the province and the university at which the student will study. Assistance is granted on the basis of academic standing and financial needs. It has been the instrument of helping many students to further study, who otherwise would have been quite unable to carry their schooling as far as they would have liked to have done.

Junior Club Day

ONE day was set aside at the recent Edmonton Exhibition as Junior Club Day. It was reported by G. S. Black, Supervisor of Junior Activities, that the attendance at this event was about 200 club members from the Edmonton area. Members inspected livestock and other agricultural exhibits, attended the grandstand show, and entered grain, dairy, feed, clothing and cooking competitions. By and large it was a very worthwhile effort.

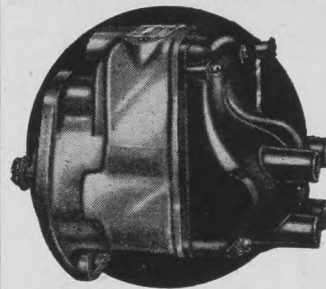
No less than 90 boys and girls attended a junior camp that ran for four days during exhibition week. Those attending received instruction in important aspects of agriculture and home management, and added to this, had a pleasant holiday at the fair. Two scholarships were donated by the Rotary Club of Edmonton, to the high ranking boy and girl in the competitions held. The scholarships were won by Lorne Undershultz of Fort Saskatchewan, and Elfriede Hetman, of Onoway. It is specified that the scholarships are to be used toward expenses of attendance at one of the Alberta Schools of Agriculture. This year's winners both plan to attend the Vermilion School of Agriculture within the next two years.

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Magneto available in sizes to fit most types of tractor engines and spark ignited power units. See your nearby American Bosch dealer for further details, or write American Bosch Corporation, Springfield 7, Massachusetts, U.S.A.



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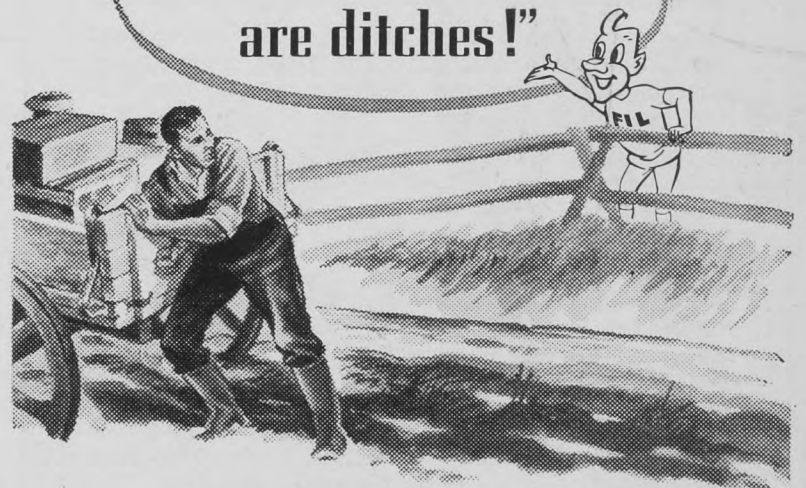


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"Maybe I am
a rugged
individualist!"

"No reporters ever interview me. But just the same I figure every man should have his own opinions about politics, foreign affairs, business, or what have you.

"Take all this talk nowadays about old-age benefits, for instance. That's something everybody wants. And each man has a different idea of how much security he wants and how he'll get it.

"I know there are a lot of old folks in this country that really need help. But while I'm young and earning good money, I figure the *big part* of my own security-building job is up to me.

"So, I'm hanging on to all *my life insurance* and adding to it whenever I can. It gives me and my family protection *now* — and a better income for the future. *And it's all planned the way I want it.*

"What's more, by relying on life insurance for my future security, I know exactly where I stand. My life policies are gilt-edged in any weather. I know just how much they're going to pay off — and when.

"That's the way I like it.

"Maybe that makes me a rugged individualist. But if it does, there are millions of others like me. Because most Canadians like to do things on their own!"



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in Canada
and their Representatives**

WORKING FOR NATIONAL PROGRESS . . . BUILDING PERSONAL SECURITY

L-250C

Breeding Bugs

Continued from page 8

you will find that up to 80 per cent of them have been mortally stricken. Enough of them escape to cause a repetition of the trouble in the following year. But it frequently happens that in another environment a parasite will do relatively better and a pest relatively worse. We have some reason to hope that the parasite which can't keep up to the beetle under Canadian conditions will do better under French skies. It is worth trying anyway.

ONE of the most important pieces of work now going on at Belleville has to do with the Spruce bud worm. This insect now threatens a huge economic loss to the fine stands of that handsome evergreen in eastern Canada.

Now it so happens that this malevolent insect is well known to British Columbia, but it is kept in check there by a number of parasites. One of the most important is known to the trade as *Phytodietus fumiferanae*. Now Phyto is as much a stranger along the banks of the Gatineau as a cow-hand in chaps. Ever since the late war years government entomologists have been collecting the Phyto clan

one of the scientists at Belleville, an idea. Why not a synthetic diet? He set about experimenting in his devil's kitchen. While employed at Cornell University, this scientist, then working on cockroaches, had prepared a cheap patent breakfast food for them as tasty to them as anything that could be found in the most palatial ocean liner.

At Belleville he cooked up a brew, chief ingredients of which are pig's liver and catfish, and found an insect, *Pseudosarcophagus offinis*, that thrived on it better than on its normal rations. Now Pseudo is a complacent guest in respect to meals, but unfortunately not very important economically. But with this success under his hat, Dr. House is redoubling his efforts to find a home-made concoction which will enable the Belleville lab to please its most important boarders, winter or summer, within the minimum of expense and the maximum rate of multiplication.

Other scientists at Belleville headed by Dr. P. D. Peilon are working on a new problem. The wide use of DDT and other wartime insecticides has raised some complications. The new poisons leave residues on trees which are lethal to insects for a long time, whereas the old arsenical poisons used to wash off after a



Quarantine laboratory used for the rearing of parasites imported into Canada from foreign countries.

around Lillooet and neighboring places in British Columbia, and shipping them to Belleville to multiply for liberation in Ontario and Quebec.

At Belleville you will be shown cages in which the bud worms are greedily feeding on fresh spruce tips. When a worm reaches the right stage of growth he is placed in another container and introduced to his enemy, a languid-looking fly with long, rickety legs. The fly, belying his looks, makes one swift, murderous swoop over what the layman would call the worm's shoulder. When the aerial attacker has passed, the worm has a parasite's egg pinned right on him. Within a few hours the spot where the egg was laid has become what might be mistaken for a water blister. In a few days the egg will hatch inside the blister, and the worm will have lost his zest for life. In the last stages, all that is left of the worm is a shell of skin. The villain inside then makes a little coffin for himself from which he will be reborn as a fly after an appropriate rest.

It will be appreciated that cutting off a lot of spruce tips to feed a horde of hungry worms is quite a chore, especially as the worms require fresh tips daily. This gave Dr. H. C. House,

comparatively short time. While the old Bordeaux mixture might have killed all adult parasites, those in other stages of growth would survive, and the parasite never entirely disappeared. DDT catches the adults of today and, unfortunately, perhaps the adults for many weeks to come. It may even wipe out a whole breed of parasites within a given area.

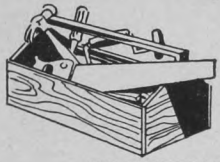
Take the case of the Oriental fruit moth, the fellow who makes you lose your appetite for a peach if he gets there first. Before the coming of DDT he was kept in check partly by parasites and partly by arsenical poisons. It is just possible that DDT has struck the parasite a worse blow than the pest in the peach growing portions of the Niagara district. It may be possible that the use of DDT has given rise to a new strain of moth that is relatively resistant to that poison. The Boyce Thompson Institute of Yonkers, N.Y., has thrown out a suggestion that maybe the fruit grower should rotate his sprays. It is a new phase of insect control which is getting full attention at Belleville.

Dr. Pielon has developed another ingenious idea. He calls it a climatron. It is nothing more nor less than a big shallow box in which the insect can

Building Ideas

FOR THE

Farm

PRACTICAL HINTS
ON MATERIALS AND METHODS

• Government experimental farms and practical farmers have found out, through experience, that milk production and egg yields are higher when animals and flocks are housed at uniform temperatures. During the past years, insulations—such as Johns-Manville Rock Wool—have been developed that help control these conditions. It is important to remember that insulation must be used in conjunction with a reliable ventilating system. Johns-Manville Rock Wool will control the temperature by reducing heat leaks, but it is the ventilating system that changes the air and helps to keep interior moisture conditions under control.

HOW MUCH WILL PROPER INSULATION SAVE YOU?

A recent, 60-day test showed that the lack of insulation and ventilation cost one farmer \$4.81 a day. Milk production fell off during cold spells, there was more sickness in the herd and more feed was consumed. Experts agree that a cow eats less and produces more when temperatures are maintained as close as possible to the 50° level. If you build a new barn or remodel your existing barn, plan to use Johns-Manville Rock Wool under the roof area and in the side-walls.

More Milk



INSULATION HELPS MAINTAIN YEAR-ROUND EGG PRODUCTION

In order to assure maximum year-round revenue from a flock it is important to maintain good egg production during the late fall and winter. Sudden changes in temperature often cause sickness and reduce laying of the flock. You can maintain uniform inside temperatures—keep egg yield at an even level—with a hen house that is insulated with Johns-Manville Rock Wool.

More Eggs



YEAR-ROUND COMFORT FOR FARM HOMES

Johns-Manville Rock Wool will help to keep your home warmer in winter . . . up to 15 degrees cooler in summer and it will pay for itself by year-after-year fuel savings of up to 30%.

Rock Wool helps to reduce the fire hazard, too, because it is a mineral in composition and can't possibly burn.



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Johns-
Manville
ROCK WOOL
INSULATION



find just the climate he likes best. In effect it is a climatic checkerboard about 20 by 30 inches, over which the insect may wander at will. As you cross the rows from top to bottom the temperature increases from 39 degrees Fahrenheit to 68 degrees. As you cross the rows from right to left the humidity changes from zero to 90 per cent.

A colony of insects will normally cluster about the spot which presents the combination of heat and humidity which suits it best. Observe now! Once in a while a few hardy souls wander off from the rest. They prefer a spot slightly cooler or drier. It is the hope of the Belleville scientists that by selective breeding from these tougher groups they may develop strains of parasites which may take kindly to the colder parts of Canada.

THE farmer is not the only beneficiary of this Ontario institution. Greenhouse operators have some tricky problems to face as their crops consist of delicate species of plants, and conditions of growth under which they are raised are favorable for the development of pests. Perhaps the commonest from which they suffer is the greenhouse White fly.

In 1927 Dr. Speyer of the experiment station at Cheshunt, England, discovered a parasite which is sure death to the White fly. These parasites were then distributed all over the empire, one consignment finding its way to Belleville. Part of the greenhouse space at this station is now solely devoted to growing tobacco and tomato plants, which serve as food for the White fly, which in turn serves as host for the parasite. The leaves, wrapped in wax paper and rolled for insertion in a mailing tube, are constantly going out to greenhouses all over Canada, for florists have come to accept this as a standard method of control. As many as 1,100,000 of these parasites have been sent out in one year, and the testimonials that have come back from greenhouse operators are as proudly treasured as medals for service.

UP to this point this article has concerned itself solely with insect parasites. It is known, however, that insects are attacked by bacteria, fungi and virus diseases. The Americans have broken important ground in this direction, although nowhere in the United States can a laboratory be found which tackles so many problems on so big a scale as are constantly pursued at Belleville. The Yankees have developed a spore which is fatal to the Japanese beetle, and which is now sold as a commercial product. They have learned that the Gypsy moth and the Spruce sawfly are heavily attacked by virus diseases, although they have not made the same headway in cultivating and distributing the noxious malady. Disease warfare is catching up on the Cabbage butterfly and the Corn borer. Our common enemy, the grasshopper, suffers from his own special brand of fungus about which scientists know a good deal. Kingston hopes soon to know more.

Architecturally the main building bearing the sign "Dominion Parasite Laboratory" is the kind of Victorian monstrosity that makes Westerners laugh at the Ottawa skyline. Don't let it fool you as to the quality of the work going on behind its doors.

**MORE
POWER
TO YOU
WITH**

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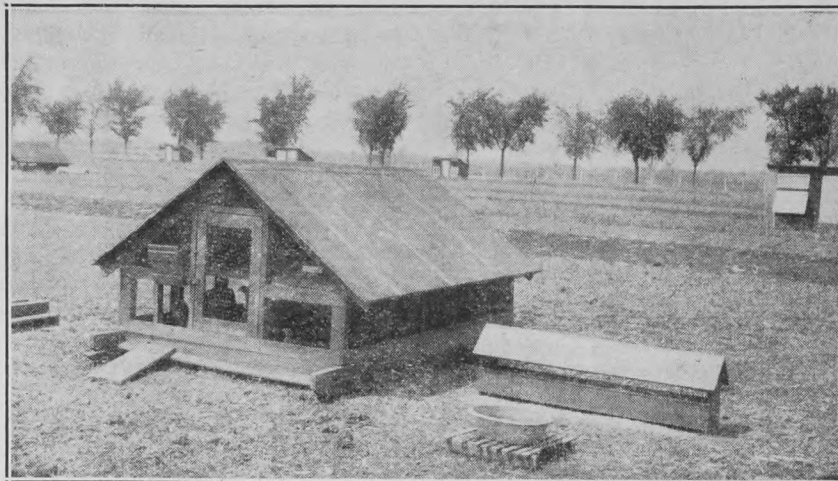
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POULTRY



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Fall Poultry Care

POUULTY breeders at the present time are determining their probable level of success in this winter's poultry production. Policies followed now are likely to determine whether this winter money will be made or lost on the poultry flock. If pullets are showing signs of coming into production and maturing a little too quickly, it would be well to close the mash hoppers during the daytime and only allow the birds access for about one hour in the morning and again in the evening. This will force them to eat more grain and pasture, and will result in somewhat slower but more natural development, and allow them to be well up to standard size and weight before they begin to lay.

See that your range shelters are moved regularly to clean ground, advises F. J. Higginson, Acting Poultry Commissioner, Alberta Department of Agriculture. This procedure helps to avoid contamination and reduces disease danger. Range should be clipped short as the greatest feed value is in new growth.

While the birds are still on the range, it is well to take some thought to the laying house against the time when the pullets will be brought in. All equipment such as feeders, waterers, nest boxes and roosts should be removed, and the house thoroughly cleaned, disinfected and whitewashed. The equipment, of course, should receive the same treatment. The building will then be ready for the birds when it is necessary for them to move in.

Rotating Range

HAVING the colony house or poultry shelter close to the farm home is a considerable convenience, but it is still not a good idea, unless there is enough range so that it can be changed from year to year. Land that is used too long as poultry range, even if it is quite well drained, tends to become sour, and sour land is an ideal breeding place for harmful organisms which bring intestinal trouble.

The answer, according to experts of the Department of Agriculture, is to rotate the poultry range. The Experimental Farm at Harrow, Ontario, has adopted the practice of rotating its large paddock, having poultry one year, a rowed crop the second, and then oats and alfalfa the third year. The alfalfa provides good range for the poultry during the fourth year. The smaller runs are used every other year, with fresh seeding in the intervening season.

During the early summer of 1949 280 young pullets were put on plot which had been in two and three-year rotations for a period of 20 years, and four months later the pullets were moved to winter quarters and it was found that there had been no sickness or death during the ranging period. Moving shelters to rested ground from year to year, and once or twice during the season is a proved and worthwhile precaution, and is likely to reduce disease incidence.

Blood Clot

MANY people worry about blood clot in eggs. Actually they are not serious, says Dr. R. L. Bryant, N.D.A.C. Poultry Department Head.

They are particularly noticeable during the spring months when there is increased production by hens. The sudden increase in production places a strain on the bird, and this frequently results in the rupture of blood vessels in the ovary. If blood comes down with the yolk, it is surrounded by the shell, just as is the yolk. If the clots can be removed, they will not affect the food value of the egg.

It should be noticed that blood-clot eggs are an inherited tendency in the bird. The breeder can breed away from them just as from other undesirable characteristics.

Mites Suck Profits

THE common chicken mite or "red mite" attacks poultry during the summer months, and may cause considerable loss to poultrymen.

Unthriftiness in the farm flock is enough to justify a suspicion of mite infestation. Their presence can be confirmed by finding an area with a "salt and pepper" appearance at the ends of the roosts and in cracks and crevices. Mites suck blood during the night and return to hiding during the day, seldom being found on the birds. For this reason the treatment is not disinfection of the birds, but rather an application of disinfectant to the areas of the buildings where mites are found.

The first step should be to remove and burn the litter, and clean the roosts thoroughly, as well as cleaning dropping boards and walls near to the roosts and nests. These areas can then be sprayed with a strong disinfectant solution, followed by an application of a mixture of one part nicotine sulphate to three parts crankcase oil. If, following this, fresh clean nesting material is supplied, there should be little danger of reinfestation.

Fighting Newcastle Disease

Newcastle disease is a threat to western Canadian poultry flocks, and its eradication demands constant vigilance

THE outbreak of Newcastle disease in B.C. some weeks ago has had a lot of publicity, part of which has done unnecessary damage to the industry. Actually, only a couple of dozen flocks have been involved, with approximately 65,000 birds slaughtered. Foolish statements have been made associating Newcastle disease in poultry with infantile paralysis in humans. This, of course, is nonsense. The disease is not one of public health, and poultry are slaughtered only to prevent the spread of the disease in poultry flocks throughout the country. Newcastle disease has been in European countries and in the States for many years and at no time has been considered a problem of public health.

Nonetheless, it is of major importance that the spread of the disease should be restricted, and finally, entirely stopped. Recently, the Honorable D. A. Ure, Minister of Agriculture in Alberta, announced that there has been an outbreak of the disease in an area about 30 miles southwest of Edmonton. The entire flock on the farm affected has been slaughtered in keeping with the regulations governing the disease. No sign of Newcastle disease has been seen in other poultry flocks in Alberta, and immediate steps are being taken to trace the cause of infection in the one flock attacked.

Officers of the Poultry Branch advise flock owners not to import any poultry or poultry products from affected areas at the present time. Under no circumstances should visitors be allowed on the premises occupied by the poultry, or in the poultry building, and poultrymen are advised not to visit the premises of other flock owners. They suggest that a mat soaked with disinfectant should be kept in a pan at the door of the poultry building, and at the entrance to the poultry yard or run. In this way footwear can be disinfected before entering and after leaving the poultry premises. Simple precautions such as this might well avoid an infection and the loss of a valuable flock.

Recently, orders have come from Ottawa restricting the movement of poultry owing to Newcastle disease. These orders are made under the Animal Contagious Diseases Act. Effective immediately, and until further notice, no person is allowed to import into Canada any poultry, raw poultry carcasses or parts thereof, or poultry eggs.

They also instruct that no person shall move poultry out of a quarantined area of British Columbia, without the permission of an inspector under the Animal Contagious Diseases Act. The quarantined area is Vancouver Island and the islands adjacent thereto; also that portion of the mainland which lies westerly of the meridian or west longitude passing through the most easterly limits of the town of Hope and being southerly of the parallel of north latitude passing through the most northerly limits of the town of Hope; also the islands lying between Vancouver Island and the mainland.

These orders include chickens, turkeys, pigeons, geese, ducks or other barnyard fowl, or other birds

raised under domestic conditions.

Within this quarantined area every owner or operator of an egg-grading station is required, also under the Animal Contagious Diseases Act, to thoroughly clean and disinfect all egg containers and fillers received at his station. It is instructed that containers and fillers shall be disinfected by being dipped for at least two minutes in, or shall be sprayed with, an aqueous solution of two per cent formalin or other disinfectant approved by the Veterinary Director General.

Every effort is being made by the Dominion Health of Animals Division to entirely stamp out Newcastle disease in Canada. Producers have seen the success that has attended policies of a similar nature with respect to Bang's disease and tuberculosis in cattle, and there is no reason to believe that the complete eradication of Newcastle disease is impossible.

A number of factors might lead a flock owner to believe that his flock has been attacked by Newcastle disease. When a number of them appear in combination he can be relatively certain that his luck has run out. Symptoms in the laying flock are coughing, rattling and gasping; this spreads rapidly through the flock and may last two weeks or longer. A sharp drop in egg production is also likely to be recognized and may continue from two weeks up to two months. Those eggs that are laid are generally soft-shelled and mostly laid on the floor. Birds with normally brown eggs will lay chalky white eggs, rough on the surface, and without normal egg bloom. Some affected flocks eat practically no food, and a number of the affected birds may have diarrhoea—generally of a greenish color. In some cases, the odd bird becomes lame or twists its neck over its back or under its breast, or even holds it to one side. Only a few adult birds normally die with Newcastle disease.

Coughing, gasping, or rattling will also be recognizable in young pullets and cockerels. Some may develop nervous symptoms. This will be evidenced with a twisting of the head or neck, and becoming lame as indicated in the case of the laying flock. The death rate may be variable, from only a few to up to 20 per cent of the flock, and there will possibly be a drop in the amount of feed eaten.

In young birds, coughing, sneezing and gasping will spread rapidly through the flock, and some chicks will emit rapid, low, chirping noises. The death rate in the case of young birds is high, from 20 per cent to 100 per cent of the birds, and some birds may develop nervous symptoms. The legs may be weak or paralyzed, and some birds walk in circles or backwards. In the turkey flock, in some cases, symptoms are similar to those found in the chicken as mentioned above. In some cases, however, few turkeys sneeze or cough, and very few develop the nervous symptoms.

If care is exercised, the likelihood of Newcastle disease getting into a flock is minimized. If the disease is thought to have made entry into the flock, the suspected case must be reported to the nearest Dominion Health of Animals Veterinarian.



1869

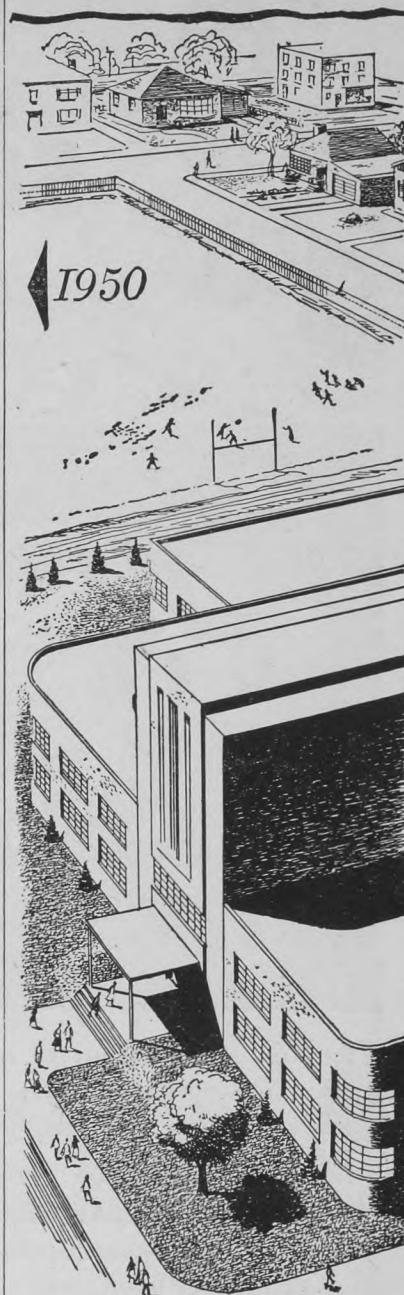
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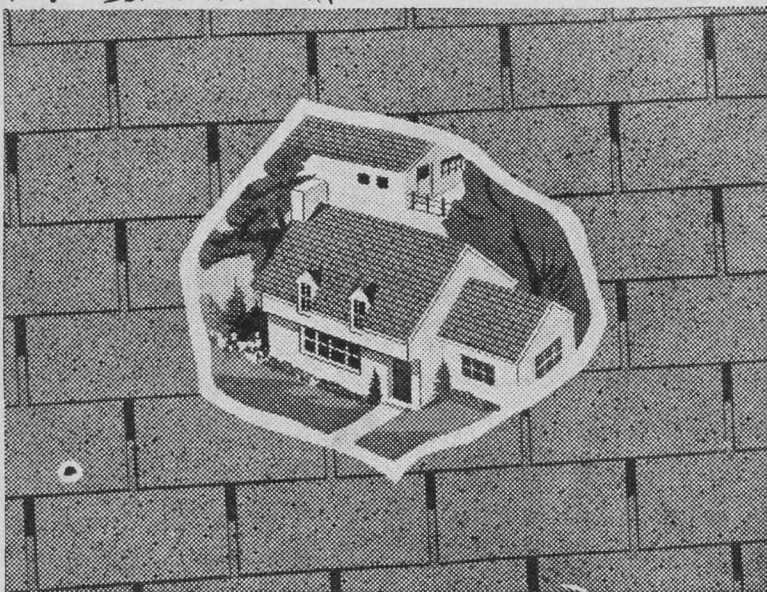
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First Year of International Wheat Agreement

The first year of operation of the International Wheat Agreement, which came to an end on July 31, 1950, was disappointing to two of the exporting countries, Canada and the United States. Canada fell short of expected sales by approximately 20,000,000 bushels, and the United States by about 80,000,000 bushels. Australia and France, on the other hand, filled their export quotas.

A number of countries, including Germany, Ireland, Italy, Brazil and the Union of South Africa, fell far short of buying the quotas established under the International Agreement. They cannot, however, be accused of default, as they were under no obligation to buy unless exporting countries should choose to offer wheat at the minimum Agreement price. Instead, export prices during the year, between countries which had signed the Agreement and in respect to quantities stipulated, were kept at the maximum. Without the Agreement, sales would have been at higher prices. Thus during the first year of operation the advantage of the Agreement rested entirely with the importing countries. Countries outside of the Agreement, which had occasion to buy, paid more for their wheat, and so also did a number of importing countries when they had need for quantities larger than the quotas set in the Agreement.

The International Wheat Agreement affected Canadian sales during the past year to a comparatively small extent, due to the fact of overlapping between the Agreement and the Canadian wheat contract with the United Kingdom which was in its last year. One hundred and forty million bushels sold by Canada to the United Kingdom came under the contract, at slightly higher than the Agreement maximum, and would have been sold regardless of the International Wheat Agreement. Canada sold about 40,000,000 bushels to other Agreement countries, but most of these did the bulk of their wheat buying in the United States. In addition, Canada sold considerable quantities, at open market prices, to countries outside of the Agreement.

The machinery of the Agreement appears to have worked smoothly in so far as the keeping of reports is concerned. Exporting countries reported to the Wheat Council sales which they made at the maximum Agreement prices, and importing countries similarly reported their purchases. Importing countries did not have any occasion to invoke enforcement provisions as they were freely offered wheat at the maximum Agreement price until quotas were exhausted. Otherwise they might have reported their difficulties to the Wheat Council, which would have called upon the exporters to meet their obligations. The exporting countries did not choose to invoke enforcement procedure, which would have made it necessary for them to offer wheat at the minimum, instead of at the maximum price. Consequently no one knows how the enforcement procedure would have functioned if it had been invoked.

The second year of operation will give a better opportunity to assess the International Wheat Agreement.

The Wheat Carryover

The Canadian wheat carryover in commercial positions as at July 31, 1950, was just under 100,000,000 bushels. There must be added to that some farm carryover, possibly in the neighborhood of 10,000,000 bushels. The quantity of wheat on farms had been reduced to the lowest level in many years. Most western farmers had cleaned out their bins, to avoid having to take a drop of 35 cents per bushel in the initial price on deliveries made during the new crop year.

The whole carryover was in Canada in contrast with conditions which used to prevail with large supplies of Canadian wheat en route for shipment through ports in the United States.

Out of the carryover have to come export shipments and domestic supplies for the next couple of months until new crop wheat is available in quantity. Moreover, terminal elevators and the transport lines of supply have to be kept adequately stocked so that wheat can be available for shipment whenever required.

A comfortable carryover in commercial positions would probably not be less than 50,000,000 bushels. In a year such as this, with farm reserves at a very low level, and with a late harvest, perhaps 75,000,000 bushels would have been considered satisfactory. The larger figure actually recorded would not give much concern except for the prospect that it will be increased during the current year.

The next year-end carryover may be considerably larger both because of a larger crop in 1950 than in the previous year and because of limited opportunities for export sales. The United Kingdom will probably take considerably less than the 140,000,000 million bushels bought under contract with Canada during 1949-50. Other importing countries, because of their shortage of dollars, will try to limit their wheat imports from North America by making full use of their domestic production, and by turning to other supply sources when they can. In addition, there has been a widespread feeling that lower prices may be in prospect and this will create a tendency to delay buying.

The carryover also may be larger because of a large percentage of lower wheat grades in this year's crop, resulting from frost damage. Such low grade wheat may be difficult to sell abroad.

On the other hand, the buying of different countries could conceivably be increased because of the war in Korea and fear of hostilities developing elsewhere. At the same time, substantial reserves of wheat in North America may for the same reason come to be regarded as a comfortable assurance against world scarcity. Such an attitude largely prevails already in the United States.

Price Spreads Between Different Grades

During the five-year wheat pooling plan which ended July 31, 1950, fairly narrow spreads were maintained by the Canadian Wheat Board in initial payments, and these were not made larger when the initial payment was increased from a basis of \$1.35 per bushel first to \$1.55 and then to

COMMENTARY

\$1.75. In making sales the Canadian Wheat Board was as a rule able to maintain these same spreads. In consequence, it can be expected that the final payment when made will be at a flat rate per bushel for all grades.

Experience with oats and barley during 1949-50 was quite different, and frequently the selling spreads prevailing as between different grades were much wider than those of the initial payments. Consequently when final settlement is made on oats and barley different rates are likely to prevail for different grades.

It seems probable that spreads in selling different grades of wheat during the current year will be wider than those of the past five years. For one reason, the demand for wheat in overseas countries is not as insistent as it formerly was, when buyers were willing to accept any millable grade, provided only that their total requirements could be met. They are now more discriminating, and look for larger discounts on lower grades. In addition, frost damage and uneven ripening will undoubtedly produce a large percentage of low grade wheat in this year's crop. Greater difficulties will be found in disposing of such wheat and price concessions may have to be made. On that account, the Wheat Board is likely to safeguard its position by making the initial price spreads wider than prevailed during the past five years. In addition, it will not be able to insist on these spreads when it makes sales, so the final payment on this year's crop is likely to be at different rates for different grades.

Feeders of livestock in eastern Canada bought a good deal of wheat for feed purposes during the past five years. Their demand this year will probably be smaller. Ontario has had a large crop of winter wheat but much of this was damaged by the wet harvest and will be retained for feed, especially in view of the fact that the price of winter wheat has declined. In addition, Ontario has had a very good crop of oats.

The Wheat Board may be able to find an outlet in the United States for some considerable quantities of low grade wheat. Though imports of milling wheat are to all practical purposes excluded by that country, wheat regarded as unsuitable for human consumption is admitted at a moderate rate of duty. Frequently No. 5 and No. 6 wheat, in addition to feed wheat, are so treated.

Delivery Quotas

The Canadian Wheat Board has set preliminary delivery quotas for wheat, oats and barley, for all delivery points, at eight bushels per seeded acre. There are no quota restrictions on delivery of rye and flax.

Delivery quotas are not intended to restrict total quantity delivered during the crop year. They are intended simply to ration elevator space available from time to time, and to ensure that all farmers have the opportunity of delivering some grain without elevator space being fully occupied by those able to thresh and deliver most rapidly.

As in previous years delivery quotas will be enlarged from time to time on a local basis whenever it appears that at a delivery point such enlargement is

possible without restricting the opportunity of some farmers to deliver grain. Conditions at each point will be examined separately by the Wheat Board whenever applications are made for an increase in the quota.

Wherever, because of drought or frost, yields have been low, and where there is a good deal of elevator space, early increases in quotas can be expected. At other points, the principal factor will be the speed with which railways are able to forward grain from country elevators. During the past few years the Manitoba crop was early, and it seemed important to get the maximum possible quantity of wheat forwarded to terminal elevators before the close of navigation. For that reason the railways concentrated their efforts first on moving the Manitoba crop. This year, the Manitoba harvest is later than in Saskatchewan, and the earliest shipments in quantity will take place from points in the latter province. Rail movement from Alberta elevators may be slow because of lack of demand for shipment from Vancouver, and the fact that the terminal elevators there may become congested at an early date. At many points the car supply will probably be disappointing. Even before the strike the railways were not in too good shape for heavy grain movements. With a large percentage of box cars assigned to other traffic that condition will be intensified due to the speeding up of military preparedness both in Canada and the United States. There is a general shortage of box cars on the North American continent, which has already given rise to complaint in the United States, and which has been delaying movement of the crop there.

Effects of the railway strike will be felt for a considerable time. It delayed the movement of old crop grain from many country elevators. Much more important, it held up the movement of all freight traffic, and various emergency needs, including distribution of coal from mines, will now be given priority over grain movement.

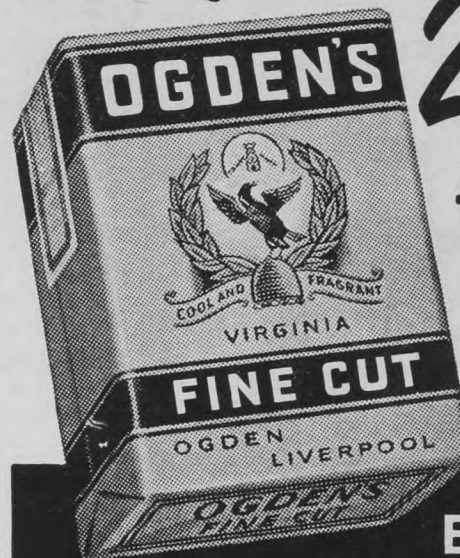
So far, wheat, oats and barley are being given equal quota treatment with one exception. A farmer who can ship malting or pearling barley is allowed one carload in addition to his quota. That fact of course is due to the desire to get such barley forward as rapidly as possible to take advantage of existing markets. As the season advances, the Wheat Board may apply different quotas as between different grades, depending both upon the market outlets, and upon local production at different points.

It is quite probable that local elevator congestion will be experienced during many months at a large number of delivery points and such congestion may develop almost anywhere.

Death of Mr. C. C. Jackson

It will be a matter of deep regret to many western farmers to learn of the death of Mr. C. C. Jackson, of Calgary, formerly secretary of United Grain Growers Limited. After occupying that position since 1929, Mr. Jackson retired in 1948. Death took place August 20, 1950, in Florida where with Mrs. Jackson he had gone for a reunion with his two daughters, who had been living in South America.

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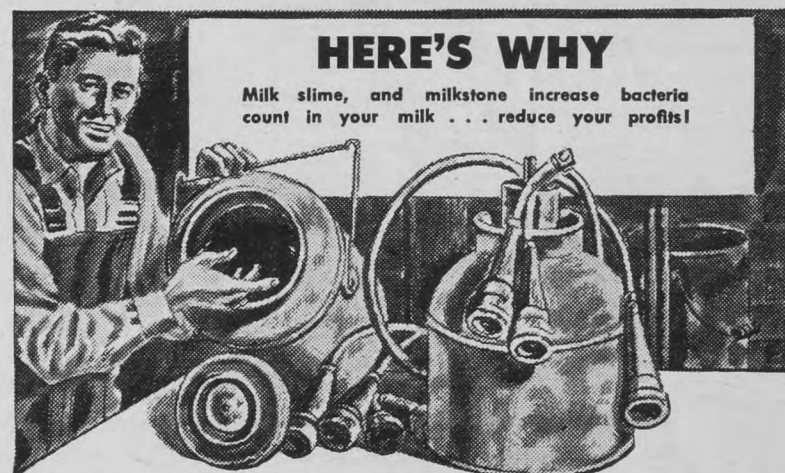
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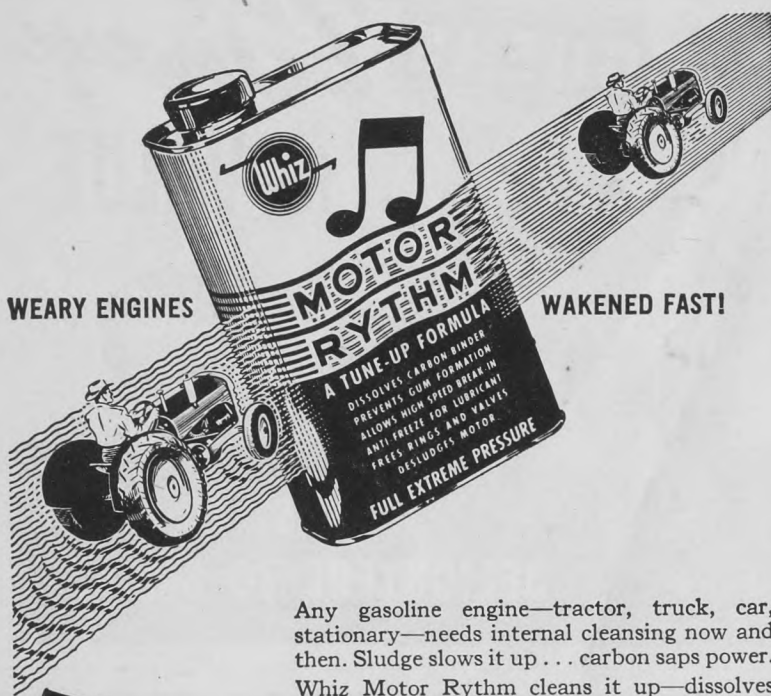
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Charette, P. Q.

Experts

Continued from page 10

only over a period of one to four years, but for a long period. They also include a search for a higher-quality alfalfa, and there appear to be certain varietal differences in this respect, particularly with regard to yellowing. Plant breeders seeking improvement in alfalfa would appear to have preferences for different flower colors, and the relation of this factor to quality is not well understood. The stem nematode, a small insect, invisible to the naked eye, has become one of the most serious problems facing the alfalfa producer in some regions. This troublesome pest is spreading, and is completely destructive. Nevertheless, some plant strains and types of alfalfa have resistance to nematodes, and plant breeders are hopeful that further resistance can be bred into alfalfa in much the same way that sawfly resistance has been bred into Rescue wheat.

Improved alfalfa may also come from new plant introductions, or further work with previously introduced species, such as the yellow-flowered Siberian alfalfa (*Medicago falcata*), which is a persistent, hardy, yellow-flowered, dense species of alfalfa that does not seed readily, but in a few plants possesses a creeping-root habit. The plant breeder has many problems to solve within his special field when attempting to combine the desirable qualities of two or more species. All plant and animal breeders work basically along the lines laid down by what is known as Mendel's Law. Since its discovery over fifty years ago, a great deal of additional knowledge has been discovered and a whole jargon of technical terms built up, which most of us cannot and do not need to understand. In its simplest form, however, Mendel's Law deals with the fact of opposites, such as, tall plants and short plants; one of them being dominant and the other recessive, or obscured. Mendel was a monk who worked with the improvement of sweet peas, for example, and found that if he crossed a short with a tall variety, the tall variety was dominant. All of the next generation were tall, but in the succeeding generations about one-quarter of the plants were short and, when crossed with each other, remained short, or in other words were pure for shortness. Another 25 per cent were tall, while the remaining 50 per cent were a mixture which would gradually segregate out in the following generations in the same way.

The plant breeder today, therefore, keeps his eye on desirable characteristics which he wants to incorporate in his ultimate achievement, and endeavors to find varieties and species which he can cross in such a way as to purify and intensify in the new variety as many of these desirable characteristics as he can. This he does by judicious crossing of two varieties (hybridizing), selection of the most desirable plants, perhaps back-crossing, which means crossing again with one of the parents to further intensify a needed character, then further selection of good plants, and then perhaps the use of what is called "synthetics," which means restricting the parentage by crossing a group of carefully selected types with each other and excluding all others. When a variety or type is sufficiently fixed, in the opinion

of the plant breeder, so that it will be of superior commercial value to what is now on the market, it may then be released, after sufficient trial under practical conditions and made available to farmers generally. There are many variations of the process, but the principle remains the same.

NO commercial crop of any kind is usually satisfactory for commercial use unless seed of the crop is readily produced. Alfalfa growers know that seed setting is a constant problem. This means that one of the objectives of alfalfa improvement is the study of seed setting, particularly as to the number and kind of insects which are available and able to trip the alfalfa flower. It also means the study of management, cultural methods, and the relationship of soil fertility, irrigation and water supply, as well as field sanitation, to the setting of seed. Finally, there is the question of insect control generally in alfalfa. This includes leafhoppers, grasshoppers and especially, in some areas the Lygus bug, while among the diseases doing great damage are bacterial wilt of alfalfa, which is very destructive, and foot and root rots.

T. M. Stevenson, Dominion Agrostologist, was able to report considerable work under way in Canada toward alfalfa improvement. Winter crown rot offers a disturbing prospect in the Prairie Provinces. Unless resistant plants can be secured, entire destruction of fields may occur in four or five years; but as a result of work under way about 200 resistant plants have so far been evolved, from which good results are expected. Bacterial wilt, widespread in irrigated areas especially, was responsible for a breeding program begun in 1945 co-operatively between the Lethbridge set-up and the laboratory at the University of Saskatchewan, Saskatoon. As a result, some plants today are consistently throwing resistant offspring. Another disease is black stem of alfalfa, which may be very destructive in seed areas. No immunity has yet been found as a result of a project begun in 1946. Another alfalfa disease, frequently reaching epidemic proportions, is the leaf spot disease of alfalfa. A few plants have so far been found free of disease in a French variety. This disease causes relatively little loss in hay crops.

Other work with alfalfa is under way to secure a variety which will be persistent under grazing. A creeping alfalfa was evolved at the University of British Columbia some years ago, which apparently does not creep under prairie conditions. It was not a true creeping-rooted alfalfa, and the achievement of this type of plant is now the aim of the plant breeder. Work in this direction has been under way at the Dominion Experimental Station, Swift Current, for quite a few years. Recently it has been speeded up, and on my return from Lethbridge I saw at this Station about two acres of alfalfa plots containing a great many very promising plants. The occasional one had a spread of more than six feet, all from one original clone, achieved by a true creeping-root which throws up plants from about six inches underground in much the same way that some of our perennial bad weeds with creeping-root stocks remain so persistent. Indeed, I saw one plot in particular, pretty

thoroughly covered with alfalfa eight to 12 inches high, despite the fact that the original plants were all killed out last winter. In eastern Canada the development of acid-tolerant types of alfalfa is under way, using as a starting point, certain individual plants which appeared to have persisted for some 20 to 30 years in acid soils.

In prairie Canada, especially in the northern areas, seed setting is the major problem. This problem is being tackled in several ways: One, by correcting soil nutrient deficiencies; another, by studying the effect of commercial fertilizers; still another, by studying the growth rate of alfalfa under various conditions. The latter work is being done at the University of Alberta. Finally, the actual pollination of the alfalfa flowers by insects seems of most immediate importance.

The work that has been done on this problem of insect pollination in Canada and the United States would require a great deal of space to relate,

utilized much more effectively than in the past. The bumblebees, of which there are about eight species, have a preference for alsike and sweet clover and, to some extent, red clover. The five useful species of leaf cutters are fairly persistent pollinators and fairly good trippers, but are not present in great numbers.

In certain treeless areas, there are ground-nesting species of bees which are useful, but little is known about their life history. Experiments have been conducted in certain parts of the United States with tame bees by testing the results of using different numbers of bees per acre in commercial seed production fields. Generally, it has been found that from four to six colonies of bees per acre have been necessary for really satisfactory pollination by tame bees. Dr. F. S. Todd of the U.S. Entomological Laboratory, Tempe, Arizona, reported that experimental work done with tame bees led to the conclusion that community effort would be most productive of

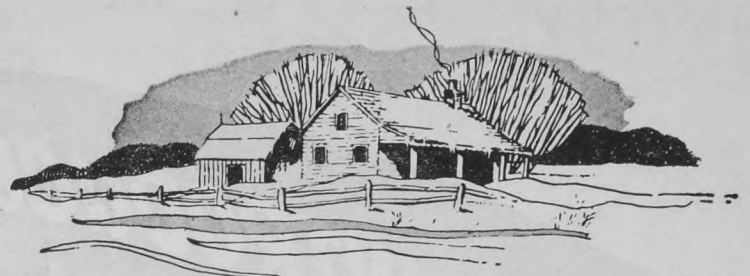


Prairie men at the Alfalfa Conference: (left to right) Dr. W. Broadfoot, Dr. W. J. White, A. E. Palmer, Dr. M. W. Cormack, Dr. J. L. Bolton, R. W. Peake, all of Lethbridge, except Drs. White and Bolton, of Saskatoon.

even if one were fully cognizant of it. The fact is that the wild bees of various species seem to be the best alfalfa pollinators, and, as H. McMahon, Dominion Entomological Laboratory, Saskatoon, related to the conference, these wild bees are being pushed farther away from the alfalfa fields each year by the breaking up of new land. Previously it was common for a farmer to break a few acres and seed to alfalfa. He would get a good yield of seed, perhaps 700 pounds per year. This was so satisfactory that gradually the whole quarter would be broken and treated likewise. The natural habitat of the wild bee was thus disturbed, and the consequence is that in 18 or 20 years alfalfa seed production has reached a point where, on the basis of present knowledge, it has become a precarious business. Fields last from seven to 11 years, but if satisfactory pollination means alfalfa fields close to unbroken land where the wild bees have not been disturbed, the future of the alfalfa seed industry then depends on the amount of new land still remaining for settlement. How, then, to encourage the bumblebee and the leaf cutters, which are the chief wild bees in northern areas, is the problem, unless the tame bee can be

results. Since it was now becoming the custom in some areas for apiarists to rent their colonies of bees for the season to alfalfa seed producers, the cost might be unnecessarily heavy to a single producer, while his neighbors would benefit substantially, unless all contributed to the service fee. Apparently, if someone could breed a tame honey bee which would trip the alfalfa blossom, he would solve a very urgent problem.

Of the 48 states and five Canadian provinces from Ontario west, the alfalfa problem most often considered important is that of yield. This is followed in order by leaf spot (*Pseudopeziza*), bacterial wilt, hardness, black stem of alfalfa, hay quality, damage from potato leafhopper, and seed production. Many other problems are considered important in a lesser number of states and provinces. Alfalfa improvement, however, is being approached from many directions, and it is to be hoped that science will have been able, within a very few years, to secure for the farmers of Canada and the United States more of the potential advantages of this outstanding legume than have been possible up to now.



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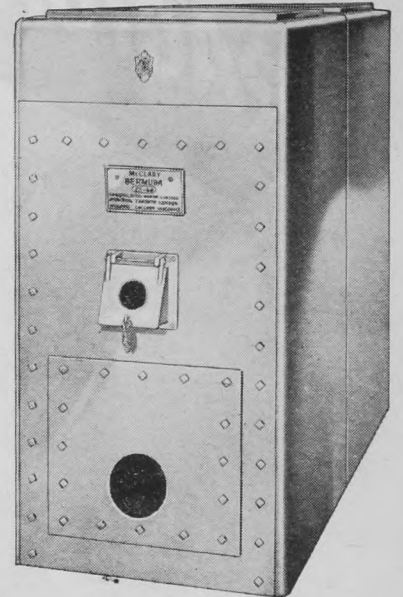
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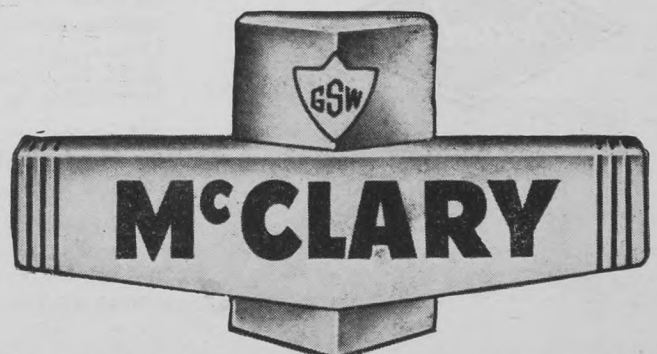
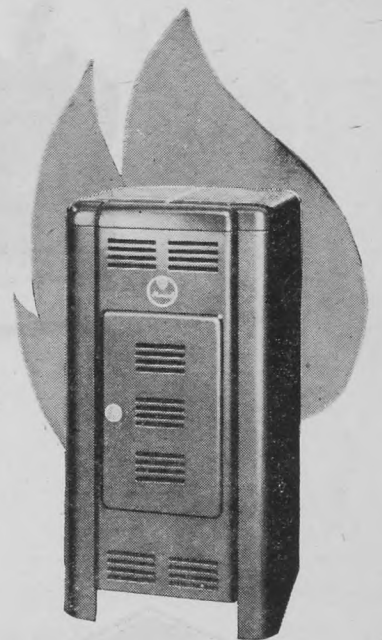
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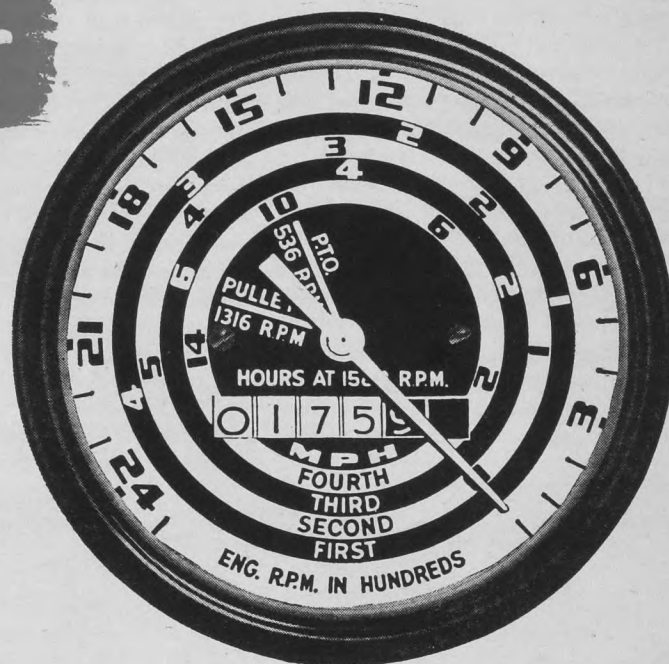
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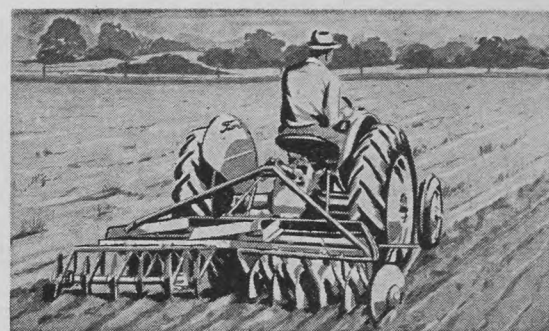
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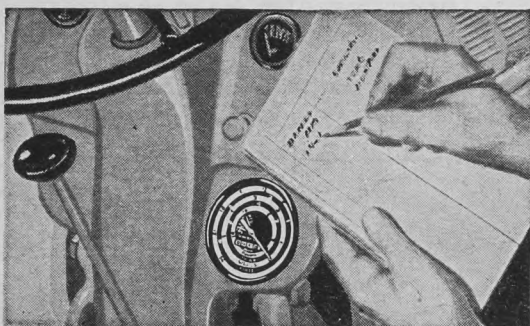
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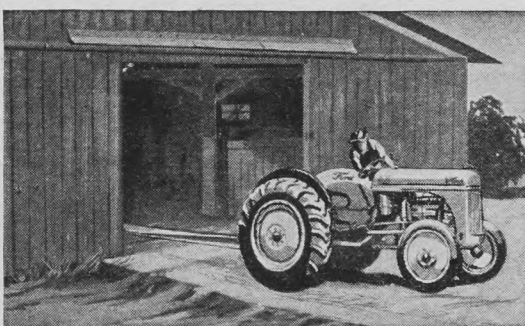
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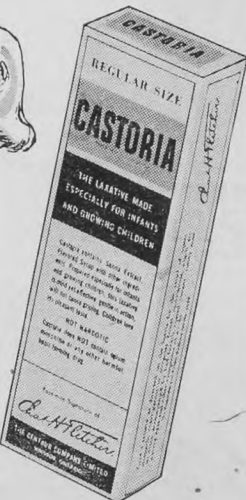
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Swimming The Channel

Would-be channel swimmers now have a considerable library of experience to guide them

by HARVEY DAY

CHANNEL swimming is now a major British industry. Last summer scores of would-be conquerors lined up for the honor of swimming to France and even a seal, specially imported from America, joined the queue, and naturally, outpaced the mere humans. Attempts were made to glamorize the event. When after tremendous publicity an American teen-ager finally entered the water, loudspeakers in the accompanying tug blared her favorite tune "Slow Boat to China," and commentators relayed a minute-by-minute description to twelve million listeners in the States.

No matter how much ballyhoo is generated over the Channel swim it will never be easy, and those who cross under their own steam will always look back with pride as having accomplished a feat needing exceptional strength, stamina and courage.

Channel swimming has changed tremendously since Captain Matthew Webb dived off Princess Pier, Dover, in 1875 and struggled to France. It is a fascinating battle; the Straits of Dover is one of the most treacherous and fickle stretches of water in the world, and the crossing can never be made easier by the use of science. The Channel has beaten some of the finest swimmers in the world.

Jabez Wolfe, a man of herculean physique and exceptional stamina, tried twenty-two times, but never touched down in France. Half a dozen times he swam and drifted for more than fifty miles. Twice he was within sight of the Dutch coast; once the tide sucked him back remorselessly when within four hundred yards of France. Though it was the life-long ambition of this great swimmer to conquer the Channel, he never triumphed.

Once Montague Holbein swam and drifted 53 miles before being forced to give up. Swimmers who have covered fifty or sixty miles in lakes and rivers, boast that they will cross the eighteen miles from Dover to Calais—for that is the distance between the shores—but the Channel has licked them.

So many factors have to be considered that even with the finest swimmers success is largely a matter of luck. The feat must be undertaken

on days when the water is at its warmest, for cold is the arch-enemy of the Channel swimmer, and there are only three months—July, August and September—when it is endurable.

Unless the sea is calm, the swimmer has no chance. Gertrude Ederle, a great American champion and the first woman to cross, paid the penalty by carrying on when the sea became choppy a few miles from her goal. She determined to die rather than quit, and when her advisers implored her to give up, she raised her blue and battered face, and gasped, "What for?"

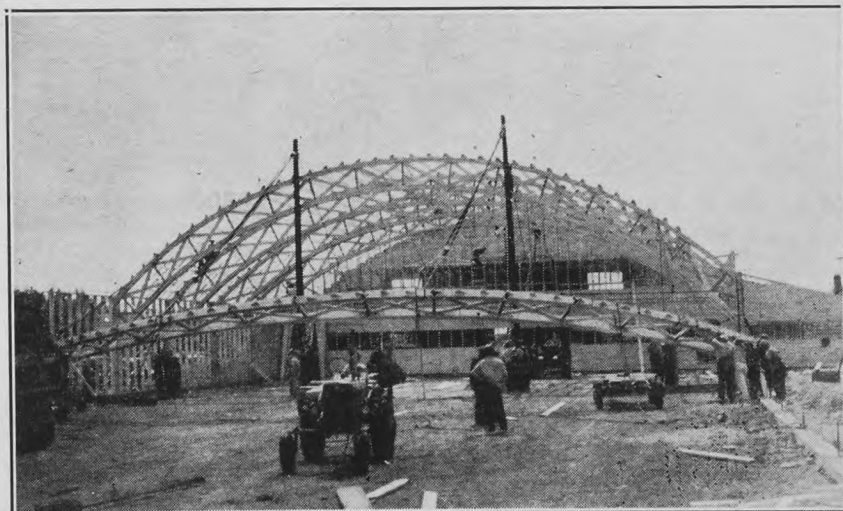
Eventually she dragged her wave-slapped body ashore and slumped on the sand. There was but the barest suspicion of life in her body, and the doctors said she would die. But she fooled them. The slap, slap, slap of the waves, however, rendered her permanently deaf, and cartilages in her spine were so displaced that she lay for months in a plaster cast. By sheer will power she regained her fitness and the National Swimming Association gave her a job for life.

EVEN during the hottest spell in summer, a night in the Channel can be bitterly cold. Without the slightest warning a fog may blow up. Holbein relates that on one occasion fog blanketed the boat from his sight and he was lost. For more than an hour he wallowed, alone and terrified, in mid-Channel. Both he and Wolfe also narrowly escaped being run down by the Channel packet-boat during fogs.

There are blue-nosed sharks to contend with, sting rays and shoals of jelly fish. In 1922, Frank Perks, a Birmingham dentist, was within hailing distance of France when he ran into a shoal of jelly fish, was temporarily paralyzed and had to be lifted out of the water.

The sky may be a cloudless vault, a brassy sun may heat the water to a pleasant temperature; but a few hours later the Channel may become flecked with those picturesque "white horses" which painters love but swimmers dread; and the water cold enough to freeze the marrow of one's bones.

Channel weather is ruled by the Atlantic and the only reliable weather reports are those sent out by the Meteorological Office, which can be



[Photo by S. Lopston.]

Work progressing on the combined curling and skating rink at Bredenbury, Sask. The total cost is expected to be less than \$15,000, thanks to volunteers who have turned out—sometimes as much as 100 strong—from the Bredenbury area and adjacent towns.

wired to the swimmer twenty-four hours before they appear in the press.

It is fatal merely to glance at the sky or wet a forefinger and hold it in the air before plunging into the Channel. Some years ago, a particularly tough American named Sullivan relied on a hunch and nearly came to grief. While some miles out on a training swim one morning, he found the water warm and the tide running so strongly in his favor that he decided to continue to France. So he sent his boat back for provisions and pressmen, and plodded on.

He was going so well that when he arrived in territorial waters it seemed that he would smash all records. He was so near France that he could distinguish people walking on the beach. Then the tide began dragging him back into mid-Channel! He battled on all night. Then the tide turned and after 27 hours and 50 minutes—the longest time ever taken to cross—he dumped his weary body on the beach.

Conditions have altered tremendously since Captain Webb's day, and the modern Channel swimmer is armed with all sorts of helpful information garnered by men like Wolfe, Holbein, Burgess, Temme, General Freyberg, V.C., Captain Pearson, and the French pilot, Emil Douay.

Douay evolved the system known as the "Two Tides Theory," in which the swimmer makes use of, and does not waste his strength against, the tides. He advised Tiraboschi, the Argentine swimmer, who crossed in August, 1923, in the record time of 16 hours 23 minutes.

The easiest course is the Ederle Course, mainly the work of Burgess. The swimmer wades in at Cap Gris Nez and with luck hits the coast between Deal and Kingsdown. It is possible to avoid harassing tides and the swimmer makes an almost direct journey from point to point.

THE start from Dover, which was once preferred, is now unpopular, for it is the most difficult. The massive walls of Dover Harbor now jut out to sea and obstruct the mass of water pouring freely through the Straits. It slaps into them, alters course and drives into mid-Channel with increased speed and power. Thus, the swimmer who starts from Dover must first allow himself to be carried to a point off the Goodwin Sands before striking for France, and if he becomes involved in the whirlpools and currents that swirl about the Sands, the attempt must be abandoned. Not even the strongest swimmer can struggle successfully against tides. The best he can do is to take advantage of them, and allow them to carry him diagonally.

If the swimmer approaches the French coast when the tide is ebbing, he has a long and hopeless battle, and it is largely luck that enables him to approach with the flood tide. Holbein once got within four miles of Cap Gris Nez in twelve hours, met the ebb tide and at the end of seventeen hours was still eight miles out at sea!

That is not all. There are spring and neap tides to consider. Spring tides run at about five miles an hour; neap tides at three. Both run across the swimmer's course.

All these factors—weather, tides and temperature—reduce by half the number of days in any one year that the Channel can be crossed. Experts say that in a normal English summer—1947 and 1949 were not normal—there is one day only that is ideal for crossing! And the swimmer may be off color on just that occasion.

Which type has the best chance of swimming the Channel? Though experts are not agreed on any particular build they say that no one who is less than 185 pounds has more than a fleeting chance, for bones must be liberally encased in fat to keep out the cold. Intense cold has defeated more Channel swimmers than any other factor, and there has never been an angular aspirant.

Today no swimmer would dream of entering the water without goggles and ear plugs, though Webb used neither. And over his skin the swimmer slaps some twenty pounds of heavy grease to insulate him from the cold.

During the swim Webb maintained his strength by drinking copiously of good English beer and devouring sandwiches of brown bread packed with sugar. Dietetics has changed all that, and swimmers today imbibe beef essence, pepsined milk, chocolate, malted milk and glucose to create heat.

Incidentally, though young swimmers are speediest, it has been found that the swimmer is not only strongest between 35-45, but has developed added stamina and doggedness.

Only two men have crossed both ways; both Englishmen—Ted Temme

and Tom Blower. Last summer Blower tried to make a double crossing on the same day, but when he reached France wiser counsels prevailed. The two fastest swims, though not recognized officially, were made by Georges Michel, a Paris baker, in 11 hours 5 minutes; and Fred Cavill, in just 11 hours.

It is almost impossible for any man, unless he is prepared to spend from £500 to £1,000 for training purposes, to swim the Channel. Gertrude Ederle was backed by her National Association; Tom Blower by a wealthy tobacco firm. In Webb's day a boat could be hired cheaply for a few shillings and life at a seaside resort was inexpensive.

The swimmer must live for at least six months on the coast and take long swims in winter to inure him to the cold and the buffeting of the waves. Philip Mickman overcame this by swimming for hours in winter in icy English rivers. This is the only sport in which the competitor trains to put on fat. It has been proved that if one is organically fit, immersion for long periods in cold water will cause the defensive mechanism of the body to put on fat—fitness with fatness, that is the aim of the Channel swimmer.

Channel swimming is one sport in which money will not ensure that one man is better equipped than another. Out in mid-Channel he is naked and utterly on his own resources. But as long as the fire of adventure burns in the veins of men, so long will they come forward to do battle with the grim, grey, treacherous English Channel.

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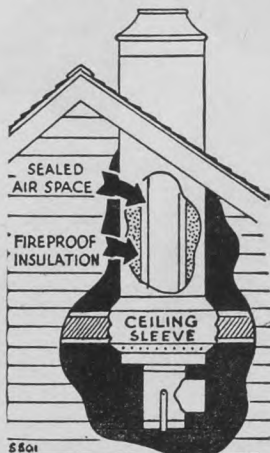
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Mr. and Mrs. Felix Meunier.

Santa Claus

Continued from page 9

he could get people to stop long enough to see his sleight-of-hand.

On this one day set apart for transforming the farm of his choice he would assemble an army of tradesmen. Painters, plasterers and plumbers would convert the house into a modern home. Road machinery would transform its approaches. Farm neighbors would transplant trees. He would promote a complete face-lifting job that would stir the owners to a re-dedication of the best that was in them to keep it and themselves on their new, proud level. People would come to see, and stay to listen.

THE municipal council gave Fontaine their blessing, and it then became their business to pick the object for their experiment. Obviously they had to select a farm with a good water supply in order to support a modern water system. The buildings should be worth while redecorating, yet the more dingy they were, the more striking the rehabilitation. Out of four possible places the choice fell on that of Felix Meunier.

The plan expanded as it proceeded. The plumbers wanted to know what was going to be done with the water they piped into the house. The household science people wanted to know what improvements were going to be installed. One suggestion led to another. Copper intake pipe led to a modern sink and bathroom, and eventually to a modern septic tank. Fontaine eventually found himself committed to new furniture and floor coverings. The indomitable agronomist accepted every suggestion that had any reasonable chance of maturing. His plan became so ambitious that it took him two years to beg all the things that it involved.

Of course everything did not go as planned. It is as hard to get 25 busy traders and artisans to drop their

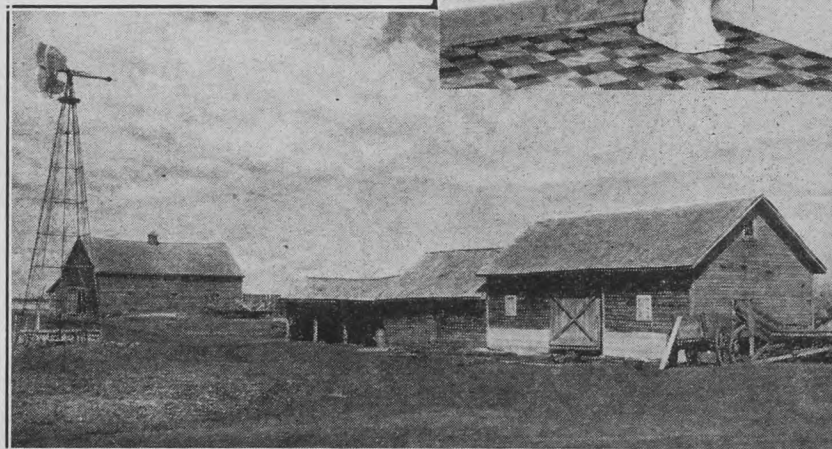
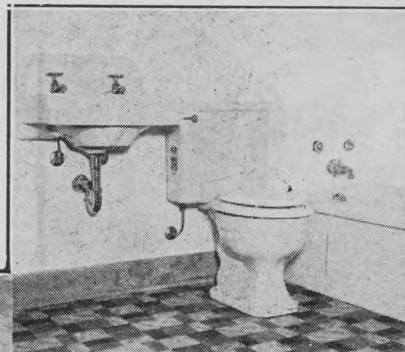
legitimate activities at the stroke of the gong as it is to get 25 horses to tighten the traces at the same moment. There had to be two postponements from the date originally set. Tree planting cannot be postponed from June to August, and so part of the work which was to have been done in one glorious burst of transformation had to be done beforehand. The buildings eventually took 137 gallons of paint and even the most co-operative

painter cannot put two coats on in one day.

But even though the original plan of doing everything in one day had to be modified severely, it became possible to name August 7 as the big day. On that day 300 neighbors gathered to make their appraisal. The women fingered the upholstery of the new chesterfield suite, and slid their open-toed shoes over the polished floor coverings, and envied the glistening sink, and were amazed at the sewage disposal system, left uncovered for their inspection. The men stalked through the house loftily, and exchanged opinions outside more quietly, wandering in groups among the outbuildings which had also felt the touch of the magic wand.

Deputy Minister Longman led off before the loudspeaker, followed by Fred Newcombe speaking for the extension service at Edmonton. But Agronomist Fontaine presided, as any good Santa Claus should, and he did not forget to get in his licks. Nailed on the veranda in front of his loudspeaker was a plan of the fields showing the crop rotation plan which the council would insist upon as Meunier's share of the bargain. Santa Claus Fontaine said some plain things about the place of livestock in balanced farming, and in their hearts the wise ones in the audience knew he was right, for Morinville is no one-crop country.

Throughout the ceremony the Meuniers kept in the background. They were too overcome by it all. They confessed that in the early planning stages they were incredulous

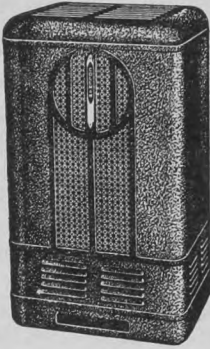


A complete water system makes luxuries like the above available on a farm home. Below, the outbuildings before they came in for their share of face lifting.

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about it. It seemed too good to be true. There must be some catch about it. But now that it had all come to pass they were quite happy to follow the directions that were laid down for their management of the farm.

Moving silently about the throng were the councillors who impressed me as better-than-average administrators, a set of councillors who knew that behind this one day's fanfare there had to be a long time plan to justify it, councillors who knew how to distinguish between a delinquent and an unfortunate. At their head is J. G. Dusseault, a member of the French-speaking majority, and a Master Farmer. His reputation is a guarantee that the tasks set for the Meuniers will be sound and practical.

The whole story of the Meunier rehabilitation raises a few pertinent questions. Is it necessary to have a field day and a Santa Claus to rehabilitate a derelict farm? Should one have to raise all this hullabaloo to get attention for better farming methods?

Perhaps not. The municipal council did not have to go about it in this

way. They had the power to issue a few crisp orders. But such a course might have had the effect of forcing Meunier to leave the farm, and perhaps to have thrown another family into the hands of some urban welfare officer. But it is a fine way of reinstating a man. If it works, it is infinitely better than the time-honored way of allowing the devil to catch the hindmost.

A PART from its effect on the Meuniers it was a fine piece of agricultural extension work. It evoked the curiosity of a bigger rural crowd than could have been collected around Morinville in any other way. It must have sunk into some masculine minds that farming methods which men like J. G. Dusseault plan for the rehabilitation of Felix Meunier, may do something for them too.

Ideally it should not be necessary to employ stunts to catch the public ear for the true gospel. But it is not an ideal world, and Agronome Fontaine knows it. He has taken a leaf from the advertising men's manual. It should pay him the same dividends.

Monarch

Continued from page 12

he pressed his body against it and began to worry the barrier with his head much as a young goat would have butted it.

The night was almost done when he managed to push the door open. He stepped timidly into the moon-lit yard. Scarcely had he passed through the door when he heard the menacing growl of a dog, and in another second the animal sprang upon him.

The teeth of the brute raked his shoulder. A fierce clamor broke out from under the porch, and other curs joined in a mad scramble to reach the fawn. A window was thrown open. A harsh voice shouted into the night. The dogs hesitated for a split second and that was sufficient for Whitetail to spring away.

Only a few bounds ahead of the pack, he headed instinctively for the swamp, his neck stretched out, a ghostly blur in the yellow moonlight, ever widening the space between himself and his pursuers. It was pure instinct that led him downward to a shallow stream, flanked with young cottonwood and briar. He took to the water for two hundred yards, coming out on the other side.

A FAWN gives little scent at best and only the ablest hounds can track a young deer. These dogs were not of the breed or character to stick to a difficult trail. They did manage to reach the point where Whitetail entered the water and to make a great noise that brought their master, Seth Grubs, cursing to the spot.

Seth had every right to feel outdone. The fawn would have brought a good penny and the moonshine business was getting more and more precarious. Seth's method of hunting deer was cruel, this causing them to gore themselves, then leaving them to die in agony, but it was cheap and safe, and venison brought a high price. Its bootlegging was not a federal offense, and therefore not so dangerous. The fawn had been an exceptionally good break for the swarthy cracker. He cursed his brother's care-

lessness, responsible for the young deer's escape.

Wild memory is a strange thing, sometimes apparently utterly lacking in even rudimentary intelligence and caution, at others canny beyond comprehension. A raccoon caught in a steel trap will gnaw off its own foot to gain its freedom. After recovery from the wound he will often be as curious again of a bright bit of metal dangling over another snare, or just as incautious over a bait of dried herring, only to be caught again. The wood duck will fly the same pathway each afternoon regardless of its persecution from gunners, and it was this trait that brought them so close to extermination.

Thus it might have been expected that these early events in the life of Whitetail would have little permanent effect. This was far from the case. Perhaps it can be explained on that individual difference that exists even between animals of the same kind, indeed as it does among men—among whom we have the bold and the timid, the weak and the strong, the gangster and the parson, the preyed upon and the prey, each belonging to the genus of mankind but each reacting differently to every stimulus of life.

Whitetail carried with him an unforgettable impression of the death of his mother; the smell of a dog or man, in all the years that followed, brought back the night of terror spent in the stall, the escape, the raking fangs of the dog, the harsh voice of Seth Grubs; not, of course, in clear detail but only as a jumbled horror.

And thus he became the wisest buck in all of Timberdrift, his antlered head the most-sought trophy, his cunning escape from hound pack after hound pack a legend. Each experience grounded the deer more and more firmly in those essentials of the school of wilderness experience, and the learning of these things means life to all the hunted of the great woods.

During the daylight hours he was bedded in the deepest canebrakes, and he learned to reach them by way of the river, leaving no trail for a hound to follow. He discarded the usual custom of the southern deer to

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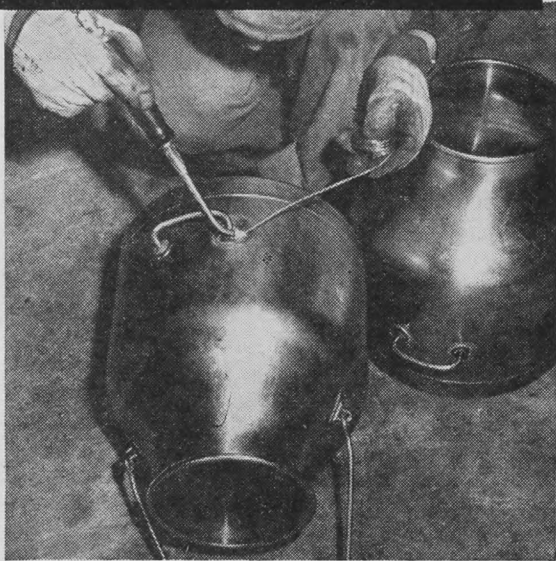
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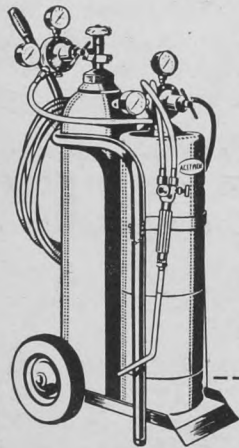
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bed up close to its feeding place, and often traveled for miles before he lay down for the night. With a strong wind blowing shoreward from the river he would stand motionless, searching for any hint of danger. Then he would swim the stream to bed up on the far side where no enemy could approach without the warning of the deer's keen sense of smell and hearing.

Ofttimes, when the dogs bayed on another trail, he would slip silently from his bed into the stream and swim down for a mile or more with the swift current. When by some mischance the pack did find his trail he never played before them, as other deer often would, but took sanctuary immediately along the edge of a great bog in the center of Timberdrift or in the cut-over timber to the north.

He did not come into his wariness at once but only as the result of innumerable escapes, each teaching him something of the hunting fashion of his enemies. His greatest danger was always at the rutting season which began in the late autumn. His graceful neck would swell, his eyes take on a mad glow, his loins tingle with a wild expectancy. He would rub his new horns savagely against the trees until the dried "velvet" was off. Then, by day and by night, with muzzle down, he would race the wood in search of the does.

The other bucks learned to respect and to fear the branching antlers, now with six sharp, pointed tines on each beam. At this season he was in his best flesh and weighed fully fifty pounds more than any other buck in Timberdrift. His sharp hoofs could strike through flesh and bone as a butcher's cleaver, and he could use his antlers as a fencing master might use a sharpened foil. In truth, for all of the deer tribe's native timidity, many a careless hunter has met serious injury from even a small cornered and wounded buck driven to final desperation.

Whitetail's sharp tracks sank deeper in the mud and his spoor was larger than that of any other buck in the region. Experienced hunters looked at them and whistled, longing for a shot at the great animal. Only during this mad season of late autumn and early winter was he seen by human beings. Then, with the incautious passion of creation in his veins, the dogs would sometimes strike his trail but he always eluded them. Never once did he come within range of the shotguns loaded with buckshot, universally used throughout the south for hunting deer.

Drive after drive was organized with Whitetail as the objective. Every failure added to the legend of his wisdom and his prestige, and in the same measure each experience added to his cunning. And to the mounting list of his foes, each of whom wanted that noble head above his mantel. Not so much, however, as Whitetail himself treasured it and desired to keep it for himself.

RICHARD BENTON'S preserve, known as Timberdrift, followed the Georgia shore of the winding Savannah for more than twelve miles, and extended through the swamp into the hinterland of low hills beyond. Bordering Timberdrift on the north was a wild cut-over region, impossible for dogs, refuge of moonshiners. It was here that Seth Grubs had built

his cruel deer trap in the days when Whitetail was a fawn, and it was here that Grubs returned in the autumn of 1935 after his term in the state penitentiary came to an end.

If Grubs had given Whitetail his first lesson, it was Richard Benton and his dogs that had completed the schooling. In fact, the owner of Timberdrift thought of himself as the Number 1 instructor of the wary deer; thought of it with a curious and humorous glint in his steady grey eyes, for now the possession of those beautiful antlers had become a passion with him.

Now the two of them—Benton and Grubs—searched for Whitetail; the one as a sportsman, the other as a killer, yet the end result would be the same to the buck except that death at the hands of Benton would be quick and merciful—at the hands of Grubs it might be lingering and cruel. In either case though, waited death, if the buck slipped by even a hair, for each of the two men was a woodsman, skilled in all the tricks of the forest and, as men go in the woods, the keenest of their kind.

It was a strange feud, this three-cornered affair, for it had been Benton who sent Grubs to the penitentiary. He had warned Grubs about his cruel practice of goring deer to a slow death, and had deliberately destroyed the deer trap, tearing away the fence. Grubs had countered by burning two of Benton's outbuildings, and along with them two of Benton's favorite saddle horses. It had taken a year of patient search to get the evidence to convict the man of arson.

The time that Grubs spent behind bars had not improved him. He returned, swarthier, more surly, with the same cruel look in his shifty, black eyes. Except with liquor in him he had little to say; then his words, though vague, were bitter.

STANDING in the gun room, Benton's head rider and gamekeeper of Timberdrift warned him of Grubs. He said:

"Look out for the cracker, he's back."

Benton showed his contempt.

"Let Grubs look out for me if he fences another deer trap," he answered.

But the rider was plainly worried.

"Grubs was drunk at Luke's Corner last night. He talked more than usual. He swore he'd get you for framing him."

"Framing him, eh?"

Benton took his rifle from the cabinet and idly passed a rag through the barrel. Then he slipped five shells into the magazine.

"Don't worry, fellow; the man hasn't guts enough to hurt me. Incidentally, I'm hunting the north line tomorrow."

He yawned and stretched and looked at his watch. The two men then parted, Benton going to his room to retire for the night.

The rifle is not the usual weapon of the south for hunting deer. The animals are ordinarily trailed with dogs. The hunters take their stands along the low ridges and at other points where the deer are known to run. The music of the pack on a hot trail warns the gunner that the deer is approaching. When the animal bursts out of the thicket the hunter gets a quick shot.

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A year gone, Benton had given this up. He did love to hear the dogs but a number of deer had been sorely wounded with buckshot, only to drag themselves off out of reach of the hunters thereby condemning themselves to a slow, lingering death. This did not jibe with Benton's idea of sportsmanship. The thought of suffering was repugnant to him.

Again it became apparent, after he had followed Whitetail's spectral movements for two years, that the big buck would never be killed before dogs except by the rarest accident. He was too canny for the wisest hound. Only in the rutting season, with a fresh trail, struck purely by chance and close to a gunner, could they hope to bag him. And this was not Benton's idea of the right way to kill such an animal. He wanted to outwit the monarch of Timberdrift, to take him through his own superior woodcraft and patience, and not through the nose of the keenest dog or the operation of any chance of the wilderness.

THUS during the past and present season he had sought the buck alone. Following the spoor once close to Poli Lake he had seen the animal drinking on the off shore. It was too far for a certain shot.

They looked steadily at each other, Benton as still as an old stump. Whitetail's eyes were not particularly keen. He could depend on them only to detect movement. Yet Benton sensed that the animal was nervous. The buck's ears were raised, his nostrils distended and his head high.

Benton's hands trembled. His heart beat wildly against his ribs. In the presence of this wonderful animal he was like a tenderfoot with the buck ague. His fingers itched to be at the trigger. He was tempted to try the long, difficult shot, but the danger of shooting the deer without inflicting a wound immediately fatal deterred him. Not for anything would he be the cause of a slow death to such an antagonist.

Perhaps it was something else. Perhaps with this first opportunity something tugged at his heart, not sentiment—surely not that, for Benton of all men understood the inflexible laws of nature, realizing that nothing dies of old age in the wilderness. Yet there was a feeling that the cloistered quiet of these forest avenues would lose a definite charm when his quest was ended, when the great buck of Timberdrift was gone.

He stood perfectly motionless until Whitetail turned indifferently and moved slowly out of sight. Then he circled the lake with the stealth of an Indian, coming up the opposite shore with the wind in his face. When he reached the place Whitetail had been standing he discovered a remarkable thing. The buck that had moved so slowly out of sight, had bounded off at full speed once the brush covered his retreat. Something had given Benton away. The deer had known that one of his enemies was near.

"All right, Old Fellow," said Benton, lifting his hand in salute. "You win this time but look out for me." There was a challenge and a joy in the gesture. Benton was actually glad that Whitetail had escaped and had shown him another evidence of his cunning.

Dawn of the day following his talk with his rider found Benton hunting an oak ridge that paralleled

the river, which ran approximately north and south at this point. He was working slowly toward the cut-over land of the squatters. He dipped to the edge of a cypress pond, nothing more than a wide shallow lake. Examining the tracks along its shore he found the morning record of a number of deer.

From these he constructed a story. A doe was moving north. She was followed by Whitetail (there could be no doubt of his spoor) and also by another buck. From Benton's experience, he knew that the two bucks were not together but that each was following the trail independently of the other, and at this season they would continue until they caught up with the doe. A recent overflow of the river made the earth soft, and a tracker even less skilled than Benton would have found little difficulty in following the three deer.

At one point the doe took to a continuation of the oak ridge, stopping probably to feed on the acorns of the wide-branching live oaks. Here it required some time for Benton to puzzle out the trail, for the ground was above the overflow and the earth hard. He was glad when he came again to the softer clay. From this point the three deer moved straight to the cut-over lands.

Benton had been tracking for more than a mile when he heard the snort of a buck, then the stamping of hoofs and the click of antlers. He hurried forward, coming suddenly to a small cleared area that had been rudely fenced with old wire. With a sickening feeling he heard the wail of a wounded doe. Through the fence he saw her impaled on sharpened stakes. Her wounds were obviously fatal—she was beyond any possible aid save that of a quick and merciful death as a release from her suffering.

GRUBS! That was Benton's first thought. He raised his rifle. No, that wouldn't do. It would warn the man. In an instant his eyes swept the small clearing, barely two hundred feet across. He saw the two bucks that had followed the doe.

Here again was near tragedy but he could remedy that. Whitetail had crowded his opponent against the inside of the fence. The smaller buck was evidently dead, but the antlers of the two animals were locked. Whitetail, with his great power, had broken his opponent's neck in an effort to free himself.

Now he stood there panting and confused, his own noble head held by the weight of his opponent's body. More than once Benton had come upon the skeletons of two bucks, dead from slow starvation following the locking of their antlers. He knew that this tragedy was particularly common to the Virginia whitetail deer due to the structure of their springy horns. On several occasions Benton had been unable to separate the horns of the dead animals except by breaking the tines from one or the other.

The man took in the entire picture at a glance, and hurried to the rude gate. He entered the enclosure, leaving the gate open behind him, and strode rapidly toward the doe, reaching for his hunting knife to end her agony. His lips tightened. No punishment was too great for a man who would devise and use any such method for snaring deer.

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Then Seth Grubs stepped through the open gate, his short, sawed-off, single-barrel shot gun held in the crook of his arm.

"Hold on, Benton," said the cracker, the muzzle of his gun swinging in an arc until it pointed at Benton's stomach. "Don't try to use yore rifle. I kin pot you from the hip with this water sprinkler."

Benton stopped and faced the man.

"You lousy swine," he answered. "You haven't the guts to shoot anybody."

He moved slightly and Grubs raised his gun. The cracker's black eyes glittered over the barrel. One lock of his long, dark, greasy hair fell over his forehead.

"Don't kid yourself. Jest keep still."

Benton looked at the man steadily, trying to weigh him; to make up his mind if Grubs would shoot. A human body would be easy to dispose of here in the swamp. It was a wild, lawless country, and the only possible thing that would deter Grubs was the fear of punishment.

"They'd burn you, Grubs, if you shot me. You're no such fool."

Benton saw a cunning light come into the cracker's eyes, and it was not good to see. That cruel, malevolent brain was working in its own shrewd, deadly fashion.

"Yeah," he drawled, "they'd burn me if they caught me and could prove it. Lot of people been hurt huntin' deer. I don't like yore movin' toward that doe. It's ag'n the law to kill does." The cracker laughed, a dry mirthless laugh.

"Jest put yore rifle down," continued Grubs, "while we talk things over, friendly like. This ole pot iron might go off."

BENTON looked at the weapon and agreed in his mind that this was true, although Grubs had meant to make only a grim jest. These old poachers had a habit of filing the sear until their guns were hair-trigger affairs. He dropped his rifle.

"That's better," applauded Grubs. "You got sense in spite of yore highfalutin' airs." His lips parted in a pleased grin, exposing the stumps of darkened teeth. He lowered his gun but held it ready in his right hand. Then he drew a case knife from his belt.

"You can look on while I polish off that big buck." His tone was charged with satisfaction. He had sworn to get Benton and here was the owner of Timberdrift delivered into his power.

Benton looked at the great buck that he had trailed for years, at the wonderful head, tightly locked to that of the opponent Whitetail had vanquished. To kill the deer under such conditions was murder, plain murder. The cracker knew of Benton's passion for those antlers—knew of Benton's dogged hunting with only this buck as his objective. The owner of Timberdrift could sense the satisfaction the cracker had in killing the buck before his helpless eyes. And after the buck . . . what?

He stepped between Grubs and the deer.

"You're not going to kill that buck," he said. His voice was so quiet that the cracker must have mistaken its determination, "but you can finish the doe caught on your devilish stakes."

Grubs looked at Benton. The whole situation seemed to his liking.

"Well I declare," he drawled again, "I declare. Looks like the wrong man's givin' orders." Then his face changed in sudden passion, the blood mounted to it and he said harshly. "Now get the hell out of my way."

He half raised his gun. Before it came to his shoulder Benton's fist smashed into his face. It was a sudden surprise move, and the cracker was unprepared. He had felt so sure that Benton was in his power; that the man would not dare, unarmed as he was, to offer resistance. The blow rocked Grubs, but he was a mean customer, toughened in a hundred brawls.

Benton threw his body forward. The fight now was to save his own life, and in it he might have to kill the cracker. There might have been some chance to turn the issue had the blow never passed. Once begun, however, a fight here deep in the swamp could have but one ending if the cracker got the advantage. There was a savage, ruthless, cold cruelty in the man. He was a killer.

Benton's arms circled him. Grubs dropped the knife, and freeing his hand reached upward and gouged at Benton's eyes. He held to the gun and this was a temporary advantage to Benton. They stood locked, straining, for almost a minute. Then with a spinning twist the cracker broke free. Benton lunged again, managed to grip the gun. They fought for it, neither daring to loosen his grip.

Benton's eyes were glued to the cocked hammer. Slowly the greater power of the cracker asserted itself and the muzzle of the gun moved inevitably downward as Grubs strained to point it toward his opponent. A shot in the foot or leg would disable Benton, and he knew very well the whole thing would be over. Both men were panting. Grubs slowly weakened Benton's grip.

Suddenly Benton released the gun; then thrusting his finger quickly under the guard he pulled the trigger. The charge exploded harmlessly into the hard earth.

Grubs jerked free, brought the stock up sharply with his right hand, catching Benton under the chin, felling him as though he had been hit with a sledge hammer.

BENTON'S head spun, and a wave of nausea swept over him. He did not quite lose consciousness but he was powerless to move. Above him Grubs was cursing.

The cracker snarled. "You've meddled with my business the last time." As Benton tried to rise he kicked him in the head.

"Stay down, you. I'm going to shoot you in the belly with yore own rifle. You can stay here an' rot. When they find you it'll be jest another accident."

Grubs spat out a mouthful of blood. He walked over slowly and picked up Benton's rifle. Then he stood above him, gloating, leering.

"First I'll let you see me finish the buck you're so anxious about. He can keep you company on the way to hell."

He picked up the hunting knife and stepped toward Whitetail who stood with his antlers firmly caught in those of the dead deer.

Perhaps it was the same greasy, rancid smell of the cracker, lingering in Whitetail's memory from those far-hated days when Grubs had spitted the buck's mother on sharpened stakes and taken the fawn to the hills. Per-

haps only the unrequited rutting fever, or as the scientists would tell you, an excess of pituitary fluid in the blood stream. Perhaps only the savage urge of Whitetail's recent conflict, or it might well have been a combination of these, and the feeling on the part of Whitetail, that he was cornered and must fight for his life. Even a squirrel will do that.

Whatever it was, Whitetail snapped his great head upward in a last magnificent effort, and two of the tines broke from the antlers of the smaller buck. Whitetail was free. Before Grubs could do a thing to defend himself the desperate animal charged. The rifle and knife were knocked from his hands. He managed to catch the horns of the maddened buck, and was at once lifted from his feet and thrown ten feet away.

Grubs scrambled up just as Whitetail reached him the second time.

"Good God, don't let him kill me," shouted Grubs. "Shoot him; shoot him; shoot him!"

Benton started to crawl toward the rifle. After all Grubs was a human being. Benton did not, even in that one instant, forget what had happened nor did he tell himself that Grubs would have spared him. He knew, would always know, that but for the deer's unwitting interference, Grubs would have killed him, would have shot him in the belly as the cracker boasted he

would, then left him to die slowly and miserably. And so cunningly would he have concealed the crime that conviction would have been impossible.

HE knew all that but he crawled painfully toward the rifle. He gripped it in his hands and fumbled for the safety.

As if in echo there was a last wail from the doe, a convulsive sobbing sound. Benton looked up to see her brown velvet eyes, agonized and questioning, looking down at him as the light flickered out.

Whitetail threw the cracker from him again. This time the man lay in a huddled heap, silent. For a second the buck stood with lowered head and quivering nostrils. Whitetail charged the huddled figure. Benton looked away—it wasn't a pretty sight.

When the fury of the attack had spent itself the buck looked toward Benton, still lying on the ground. Then refusing the open gate he bounded over the fence.

Benton, after a time, struggled to his feet. The way out of the swamp would be long and painful. He was sickened by what he had seen but, through it all, there was the memory of that proud, tossing, avenging head, and so far as he was concerned the Monarch of Timberdrift would reign forever. He wasn't sorry, Benton wasn't.

England's Oldest Avenue

Memorials like this one help to create a sense of history

by J. D. U. WARD



The 350-year-old avenue of oaks at Bucklebury, Berkshire.

ENGLAND'S oldest avenue is believed to be the two lines of oaks planted for one mile on either side of the winding road at Bucklebury in Berkshire. Bucklebury Avenue is in fact a double avenue, with two lines of trees on either side of the road, but the trees nearest to the highway are older than the others. The roadside trees are reputed to have been planted to commemorate a visit of Queen Elizabeth (who died in 1603) but the outer lines were planted to mark the victory of Trafalgar (1805).

It is interesting that there should not be more difference between the size of the trees which are respectively about 360 years old and 145 years old, but perhaps the Trafalgar lot of plants came from more vigorous

stock. On one side of the avenue, and under the trees on both sides, is common land where local residents may graze their cows, pigs and geese.

What, by the way, is Canada's oldest avenue of trees? And does it consist of planted trees or was it made by a system of selection felling in virgin forest—an avenue being purposely spared when the rest of the trees were logged? Japan is believed to have the oldest planted avenues in the world. At least one avenue of *Cryptomeria japonica* (a species very closely related to the Californian Big Tree, *Sequoia gigantea* or *Washingtonia*) is recorded to have been planted 650 years ago—which makes the 360-year-old English oaks at Bucklebury look mere youngsters.



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Using The Steel Square

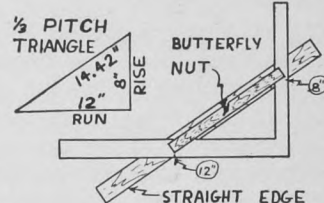
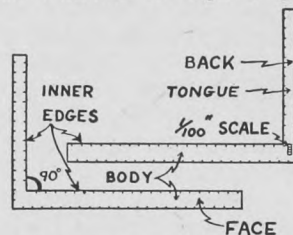
A simple tool in the hands of an expert journeyman becomes a calculating machine

THE carpenter's steel square is one of his most used tools. It is made up of two arms at right angles to each other, the tongue and the body. The body is usually 24 inches in length and two inches wide, while the tongue may be from 16 to 18 inches long and 1½ inches wide. Each is marked off in scales with 1/8, 1/16, 1/32, 1/10 and 1/2-inch spacings. An additional scale on the back of the tongue is marked off in hundredths for use with decimal equivalents of the inch.

Between the scales are the tables. These columns of figures give the

square body and run it to the tongue.

The rise per foot of run is equal to pitch x run x two. In laying out the triangle to cut rafters for a building with 1/3-pitch, $\text{rise} = 1/3 \times 12 \times 2 = 8$. Place the square on the rafter to be cut, having the edge of the rafter pass through the 12-inch mark on the body and through the eight-inch mark on the tongue. The edges of the square indicate the angles of cut for the ends of the rafter at the plate and at the ridge respectively. If a number of rafters are to be cut, clamp a straight edge across the appropriate marks on the square. A butterfly nut and a



The steel square and its component parts; the straight edge is clamped on for rapid marking of a number of rafters at 1/3 pitch.

dimensions required in cutting rafters, braces and octagons, etc. Rafter tables are usually on the face of the body of the square. The first of the six lines in the table gives the lengths of common rafters in inches per foot of run. The brace measure table on the back of the tongue gives the lengths of common braces.

Roof pitches are usually described as fractions: 1/4, 1/3, 1/2-pitch. These pitches can be laid out on the square without knowing the size of the building. The figure produced on the square is called the pitch triangle. For the base or run of this triangle always use 12 inches. Start it at the 12-inch mark on the back, outer edge of the

short piece of board can be used for a clamp.

Proper use of the square saves many calculations. The length of the 1/3-pitch line between the 12-inch and eight-inch marks is shown in the tables on the face of the square body. Under the eight-inch mark in the common rafter tables for 1/3-pitch is the figure 14.42, representing the length of a rafter in inches for an eight-inch rise and a one-foot run. If the building is 20 feet wide, with a run of 10 feet, the rafters will be $14.42 \times 10 = 144.2$ inches long. This length of 12 feet and one-fifth inch will be the measurement along the top line of the cut rafter.

Bright Adventure

Continued from page 13

more. Only worms. I hate them! I hate you! . . . Go away! Go away from me!"

"All right," said Tom. "Only don't cry."

"Cry? I'm not going to cry. I never thought of crying."

TOM walked down the beach, settling his Coast Guard cap to a jaunty angle. Amelia burst into tears. She stood weeping, twisting her hands in the pockets of her old sweater while she watched the blurred outline of Tom's sturdy figure going away from her. Let him go! He was like all the others. Once she had thought him different. She remembered when he had become one of the crew at the Bayberry Cove station. She had been thrilled. The dark blue uniform, the visored cap rakishly a-swagger on his crisp, red hair, had set her heart bounding at its sheer magnificence. She had thought it romantic to belong to the Coast Guard. Emergencies arose, there was danger, a chance for heroism. She was 16 then, and she used to wait for him, walk beside him, asking questions.

"If a big ship was wrecked, Tom, you'd have to launch the lifeboat no matter how bad a storm, wouldn't you?"

"Sure," said Tom.

"Even in the middle of the night?"

"Oh, sure."

"Would you go in the boat?"

"Sure. I pull Number Two oar."

"Gracious . . ."

But three years had passed and no ships had been driven ashore near Bayberry Cove station. The lifeboat lay upon its wheeled carriage in the shed and never came out except for practice. Tom tramped the beach on his shift, took his turn in the watch-tower, washed his clothes, painted and scrubbed, drew his \$60.00 a month and took her to the movies on his off nights. He never dreamed of strange cities, remote lands, unfamiliar people as she did, or felt the urge to adventure, to risk, to dare. And what were men for, if not for that? Amelia thought savagely. How could they spend their lives grubbing a few dollars from fish stores, or carpentry, or garages, when there were fortunes to be won in great cities? How could they marry the lazy, dull Hildegard Rosens, when there were enigmatic women, beautiful women . . . ? No, Amelia decided, they're timid and slothful. They like to sit and talk and smoke. So does Tom . . .

"Well," said Tom, "are you through crying?"

Amelia turned, startled to see him again. He had returned unnoticed and was standing at the foot of the dune.

"I wasn't crying."

"Weren't you?"

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"The sun was in my eyes."
"You're standing with your back to the sun."

"That's all you know," Amelia said at random. "Why did you come back? I don't want to see you again. Never!"

"Okay," said Tom. "I only wanted to tell you that I'll stop by about seven to go to the movies tonight."

Amelia did not answer. Tom waved his hand cheerfully and went down the beach toward the station. Amelia was scarcely conscious of his going. Her imagination raced unconfined beyond the darkening sea-line.

That evening, at supper, she ate silently, oblivious to her mother's gossip and her father's retelling of the day's trivial events. The bright picture of adventure continued to pass across her mind.

"Mother and I are going over to Bascombs," her father said. "We may be late."

"All right," said Amelia. "Tom's coming to take me to the movies."

Her parents had scarcely gone when the telephone rang. It was Tom. Amelia did not recognize his voice at first. It was husky and quick with excitement.

"Listen," he said, "I can't come tonight. Some gunmen held up the bank at Beach Crest just at closing time. Four of them. The First National. They shot old Dutton, the watchman, and took \$20,000."

"Oh, Tom," Amelia said, "was Mr. Dutton badly hurt?"

"I don't know . . . But this is what I want to say: the troopers have shut off the bridge and the railroad. They think the four of them are trapped here on the island. All us Coast Guards have been made special deputies to patrol the bay shore and see they don't swipe a boat and get away."

"How thrilling!" cried Amelia. "Tom, you might capture them. Everybody would say . . ."

"Don't he look natural?" finished Tom. He laughed grimly. "I've got to do this but I don't like it. And I want you to stay inside and lock the doors and windows."

"That's silly," Amelia said angrily. "This is exactly what I was saying . . ."

"Do as I say," said Tom, and hung up.

AMELIA took a magazine and lay down on the couch but she could not read. She kept seeing the shadowy forms of men, running, crouching, hiding, seeking to find some way of escape from that strip of land, ten miles long and not more than a mile wide, where they were trapped. Unable to stay still, she wandered to the window, but only her reflection stared back from the dark glass. At ten o'clock, she decided to drink a glass of milk and go to bed.

Halfway to the kitchen, she heard the first shot.

She paused, her heart beating violently. Then there were two more, three, followed by a single report. She waited, irresolute. The gunmen had been sighted. Perhaps someone was hurt, killed. Suddenly she felt she must know. All her apprehension vanished. She felt alert, excited, eager. The last shot had seemed quite near. She went into the living room and put out the light. Returning to the kitchen, she reached for the latch and lifted it. The door swung open and a rush of chill wind struck upon her. She stood in the doorway waiting

for her eyes to become used to the thick darkness. Then the night near at hand moved and a tall man slid along the wall of the house, thrust her back into the kitchen and came in, closing the door and leaning against it.

"You alone?"

Amelia nodded.

"Is there any way of getting off this island?"

"Only the bridge," Amelia said, "or a boat." She was surprised that her voice was so steady.

The man considered her reply. He leaned forward, resting his free arm on the table. He had a harsh, impassive face and a square jaw. He looked a little foreign. Romantic, Amelia thought incoherently, and . . . and pagan. And big. He was a half head taller than Tom. He moved his shoulders impatiently and she saw his wrist and forearm bright with blood.

"You're hurt," she cried.

He laughed.

"You're telling me?" he said.

So he was a gangster. One of the state troopers or a Coast Guard had shot him; possibly Tom. Wounded and pursued, alone in a strange place, facing odds, he had laughed. The stuff of adventurers. And she had a part in it. Adventure had rapped upon her door. She must not be found wanting; she must not tremble like a flabby Hildegard Rosen. Now was her chance to prove what she believed. The man tilted his head and listened.

"I got to get away from here," he said. "Find a doc."

Amelia smiled. All at once she was calm, collected.

"I'll bandage it," she said.

The man hesitated, suspicious, uncertain. She could see him weighing the matter. Presently he seemed to make up his mind. He came farther into the kitchen. Amelia went to the door and turned the key. He leaped around at the click in one motion, like a great cat pouncing, and caught her arm.

"What's the idea?"

"So no one can come in suddenly," Amelia said.

He released her and stepped back.

Amelia pulled down the window shades, lit a kerosene lamp and turned the wick low.

"Now," she said, "take off your coat."

The man grinned.

"Say, you're some . . . I mean, I don't get it, lady."

She helped him ease his arm from the coat. The sleeve of his silk shirt was sodden with blood. At the sight of the torn hole across his shoulder, she gave a little cry. The bullet had gone through the muscle and come out, ripping the flesh.

"Doesn't it hurt?" she asked.

"Yeah, some."

She soaked a pad of cloth in anti-septic and bound it over the wound.

"That ought to stop the bleeding," she said.

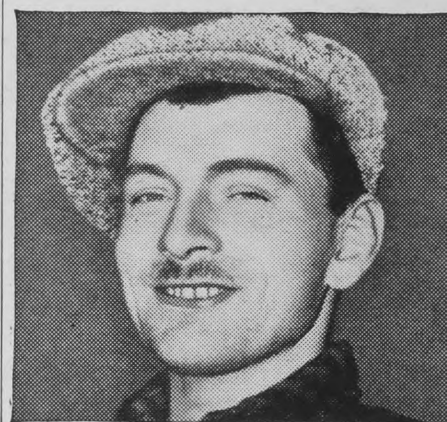
"Thanks. You're sure . . ." He paused, drew in his breath with a thin sound. His face set, bleak with sudden alarm. Only his black eyes moved toward the door. Amelia turned slowly. Voices sounded outside; feet on the walk approached the house. The man's right hand swept swiftly toward his hip pocket. Amelia shook her head desperately.

"Here," she whispered. "Down here. Trust me."

He looked at her, undecided; the flicker of suspicion went out of his



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eyes. He nodded and descended the cellar steps. Amelia caught up his coat and handed it to him. She shut the door and locked it; glanced about . . .

Someone rapped on the kitchen door.

"Amelia! Hey, Amelia!"

Tom's voice.

COLD apprehension numbed her mind. There was blood on the table, on the wads of cloth; the washbasin was full of ruddy water.

"Amelia, what's wrong?"

She struggled for time.

"In a minute. I . . . I . . ." The inspiration came. "I cut my hand. It's bleeding. I'm bandaging it."

She grasped at a tin of preserved peaches, seized the can opener and drew the sharp blade ruthlessly across the fleshy part of her thumb. An agony of pain stopped her breath. She dropped the opener and stared fascinated at the red, spurting blood. All the time another part of her was watching the performance, chuckling and praising, "Marvelous. This is a real adventure."

"Amelia! Let us in!"

"Coming."

She turned the key and opened the door. Tom and two other men from the station came in. Their eyes widened in astonishment at the sight of the bloody table top.

"I cut my hand," explained Amelia.

"I'll say you did," exclaimed Sayre Biggs.

Tom took her hand and examined the wound.

"That's a nasty cut. Here, put it under the cold spigot."

He took some clean strips of linen and tied them tightly about her wrist and over the cut.

"The opener slipped," Amelia said plaintively. "It . . . it was when I heard a shot. I was startled. What happened?"

"Oh, boy," said Sayre, his lean face brightening. "We come on two of them gunmen making off in a row-boat. They started shooting. So we did some, too. One come up this way."



"That gives me a marvellous idea for a hat!"

"Bill thought he was headed toward this house," Tom said. "See anyone, Amelia?"

"I was too busy with this," Amelia said, holding up her hand.

"He probably ducked down in the dunes," Bill said.

"Let's go," said Tom impatiently.

He stepped back and glanced about the kitchen, his hands jammed in the pockets of his pea jacket, his eyes moody. Amelia could not help smiling at him. He looked so baffled and angry. If only he knew. She felt jubilant at the ease with which she had fooled him, and at the same time contemptuous of him for being so readily deceived.

"Didn't you shoot anybody, Tom?" she asked sweetly.

"No," he answered harshly. "You better let Doc Saunders see that cut."

"It's nothing," Amelia said.

"It sure bled plenty."

He paused with his hand on the door, debating something, decided, opened the door and, followed by Sayre and Bill, went out.

THE cellar door swung back. The man was crouching on the top step. She caught a glimpse of dull metal as he shoved an automatic into his pocket and came into the room. His manner had altered. He looked wary, almost frightened. His dark eyes glanced everywhere except at Amelia's bandaged hand.

"Well," he said, "thanks a lot. I'll scam now."

"All right," said Amelia. "Only I'm going with you."

The man's mouth fell open. He gasped, choked, tried to speak.

"Say, lissen. Lissen, lady . . ."

"You heard them," Amelia said, her contemptuous gesture indicating the departed trio. "That's the kind they are. They're all like that here. I'm leaving tonight. With you."

"Not with me, lady. Not a chance."

Amelia turned and looked at him steadily. He shrank toward the door.

"Are you afraid?" she asked, astonished.

"Afraid?" The man swallowed con-

vulsively and reached for the knob. "I sure am. I ain't afraid of no man. But I don't get mixed up with no dames, see? Not me."

"Why," Amelia said slowly, "you're a worm, too."

"I don't know about that. Only I ain't no mug."

Amelia gazed at him meditatively. He no longer appeared bold, romantic, pagan. She saw a tall stranger, shuffling his feet awkwardly, his narrow black eyes watching her suspiciously; a powerful, sinister man suddenly confronted by something he didn't understand, and frightened. An adventurer? . . . Amelia laughed. The man jumped, grabbed frantically at the door knob, flung open the door—and cursed in terror.

Tom stepped inside and closed the door behind him.

The man was tugging at the pocket of his coat. Amelia saw his face, the murder in his eyes. She screamed.

"Tom, look out! A gun!"

"The hell with it," Tom said.

There was the crack of a hard fist on flesh. The man toppled backward, struck a chair, overturning it, and fell with a clatter and thud to the floor. Tom reached down and took the gun that had been knocked from his hand.

"Get up," he said.

"The man arose clumsily and clung to the table, swaying.

Tom opened the door.

"Get out," he said. "And make tracks. If you're in sight in ten seconds I'll put a bullet in you."

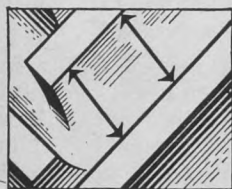
The man slunk into the darkness. Tom slammed the door. He picked up the chair and emptied the basin

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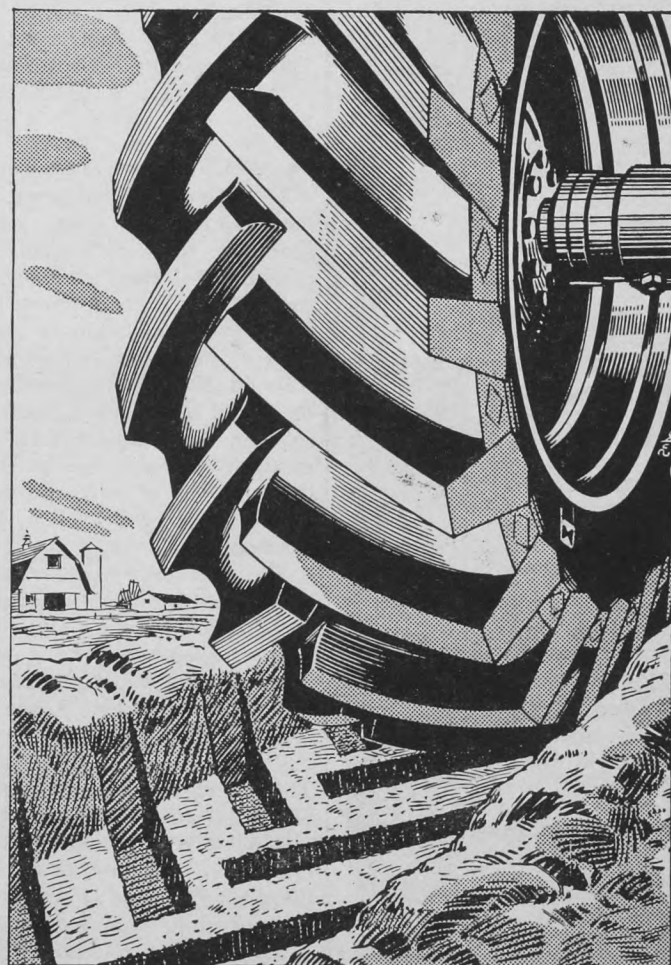
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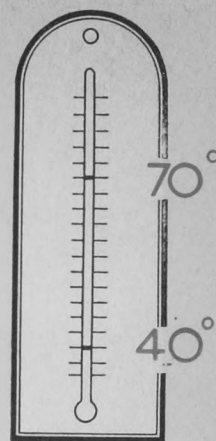
3. Deeper bite: There are no hooks, knobs or elbows to blunt the bite. The Super Sure-Grip open-center design means clean, full-length penetration, and a self-cleaning tread. This design may be imitated, but without the straight-lug bar it can't be equalled!

4. The Goodyear name: You expect the best from Goodyear. Goodyear has tested every known tread design, closed center, curved lug, dozens of others! In every case, in every way, Super Sure-Grip proved best! If there were a better design . . . Goodyear would have it! To be sure of getting all these features specify Goodyear when buying a new tractor or replacements!

GOODYEAR
SUPER Sure-Grip Tractor tire



Yes, SIR! YOU CAN HAVE 70° ABOVE AT 40° BELOW



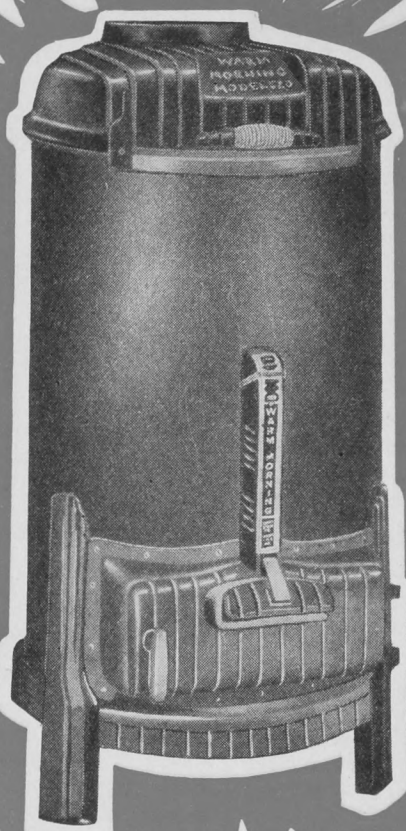
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United Grain Growers Ltd.

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The Guide Post to  *Efficient Grain Handling* 

Happy Birthday to You...



and a new MAGIC cake they'll really sing over!

New birthdays coming up . . . and a wonderful new MAGIC birthday cake to thrill the party! Glamorous—yet easy to make and fix. And so perfectly baked, the sure Magic way! Feathery light, flawless in texture, and

above all, rapturous flavour!

Yes, for uniformly fine baking results it pays to depend on Magic Baking Powder. *Costs less than 1¢ per average baking.* Safeguards more costly ingredients. Always keep Magic on hand!

MAGIC BIRTHDAY CAKE

3 cups sifted pastry flour	6 tbsps. butter or margarine
or 2½ cups sifted hard-wheat flour	1½ cups granulated sugar
4 tps. Magic Baking Powder	4 eggs, well beaten
¾ tsp. salt	1½ tps. grated orange rind
6 tbsps. shortening	1¼ cups milk
	1½ tps. vanilla

Sift flour, Magic Baking Powder and salt together 3 times. Cream shortening and butter or margarine together; gradually blend in sugar. Add beaten eggs, part at a time, beating well after each addition; mix in orange rind. Measure milk and add vanilla. Add flour mixture to creamed mixture about a quarter at a time, alternating with three additions of milk and combining lightly after each addition. Turn into one 7" and one 9" round cake pan, 1½" deep, which have been greased and lined on the bottom with greased paper—if pans are shallow, line sides with a "collar" of greased heavy paper. Bake in moderate oven, 350°, 35 to 45 minutes, depending upon size of cake. Cover and decorate cold cake with butter icing—tinted to match candles, for filling and lower layer.



From A Buyer Of Malting Barley

An American buyer, H. C. Laidlaw of Milwaukee, does some thinking out loud which may be a guide to farmers producing for this highly specialized market

THE buyer of malting barley must buy according to the individual plant policy of his principals, and must maintain a constant supply for the six to 12 months continuous production which his company plans to operate. To do this he must study markets for the trend of prices, and estimate deliveries so that he does not end up with too much or too little. He must also study the character of the various barley types that are going into shipments so that the proper amounts of these types are available. So a buyer must keep constantly in mind his stock position, and his estimates of supplies in the grain trade and back on the farm.

Above all else his company will cherish him if he does not buy all his supplies at the high point of the market. Our policy has been to stay in the market each day, to take as much barley as possible when it is available, so as to get along on smaller purchases when shipments are fewer.

Let us pause now to consider the various factors by which a buyer gauges a particular lot or car of barley.

First, will it germinate? This is, of course, the major question facing all buyers, and takes in all the points that follow. The germination of barley is usually excellent if the crop has matured normally, was harvested dry, was given a chance to cure properly before it was threshed, if it was not threshed too closely, and if it has not been stored under conditions which permit or encourage heating.

I will not buy a car if I find a single heated kernel in the pearl, or if I can detect a musty odor. This barley may germinate, but it may give trouble, and I like to avoid trouble.

As the identity of each carlot is maintained till after germination, it is not long before the buyer has a record of the areas from which slow germinating grain is coming, so that one of the first questions asked by a buyer is "from what country point did it originate?"

After a close visual inspection the buyer digs into the bottom of the sample box to make sure that the wheat, if it contains any, hasn't been jarred down to the bottom.

THE ideal barley is bright, free from ground damage, or mold, and it is full-bellied; in other words the kernels are plump and well filled. The buyer watches to see that there is no sprouted barley in the sample, and then he estimates the cleaning losses.

Apart from weed seeds, cleaning losses may be due to "needles" or the presence of other grains. "Needles" is the trade term for thin barley which will pass through a 5¼/64x¾-inch screen. The percentage last year varied from 10 per cent in some of the early run barley from favored localities, to 25 per cent for the worst lots. The needles sold on the market, when cleaned out, from 85 cents to \$1.20. Since the range of barley bought in the same period was \$1.40 to \$1.70,

obviously the percentage of needles is important.

The percentage of wild oats and other grains which the maltster can remove is an important factor in determining price. The buyer classes them in his own mind as dockage, even though American grading regulations do not permit the use of that term for grain admixtures. But nevertheless they represent a loss which the maltster cannot recover. In the case of wheat and short plump oats, the buyer knows that they are impossible to remove completely, and so they will degrade the quality of the malt that will be made from the barley. Also a lot of good barley will be lost in attempting to remove them. For this reason cars containing other grains will be bought at a severe discount.

THE buyer pays a great deal of attention to the variety of the sample. He knows the varieties which are most suitable to the procedures followed in his plant, and which are in greatest demand by the customers of his malt house. The truer a sample is to variety, the more eagerly will he bid for it. There is an excellent reason for this. Each variety of barley reacts differently with respect to time of steeping, to temperature, and to the other conditions of the germinating compartments. Therefore if the buyer can build up reasonably pure lots, the better his maltster can do. Since mixtures do not behave as favorably in the malt house, the buyer discounts them accordingly.

After barley is bought, it is binned according to the variety and the general climatic zone from which it was shipped. In our Milwaukee plant we maintained 27 such selections and malted each one separately. After cleaning, each lot is sized into "Fancy, Choice and Standard," for the more uniform barley is as to size, the more uniformly will it malt. Therefore after cleaning we required 27 times three, or 81 bins. Since not all of these bins are full at any one time, the question of storage is almost always pressing with us.

This is when the elevator companies perform a service to both grower and maltster. The maltster has to leave the market when his storage is in full use, although some of his bins may only be partly filled. When his support is withdrawn the market usually declines. It is at this time when elevators step in and buy and thus help to maintain prices. Also, they buy the barley which represents a cleaning problem that the maltster cannot undertake.

If a farmer grows an approved variety, plants as early as possible, watches his harvesting operations to protect the quality of his product, and stores it carefully so that it does not deteriorate, he should be able to look forward to good prices for all he can produce. There is always a good market for malting barley if it is of good quality.

of blood-stained water. Amelia watched him, unable to think. She felt dazed, humiliated, tricked. She tried to think, to make reasonable what had happened. Tom had come back. He had hit the man. He hadn't been frightened of the gun. Then he'd let the man go.

"Why did . . . you come back?" she asked.

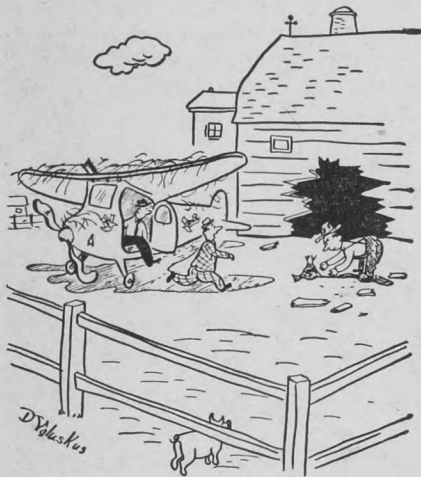
"To see what you intended to do."

He went on straightening up the kitchen, mopping the blood from the oilcloth, bundling the bandages into the trash box. Amelia said:

"You . . . you knew he was here?"

"Do you think I'm blind?"

"But I don't understand . . ."



"Gee, we're sorry about the chicken!"

Tom pointed beneath the sink. Amelia gasped. There lay the man's grey felt hat. She stammered:

"But why didn't you . . . ? When Bill and Sayre were with you . . . ?"

Tom turned his unsmiling face toward her and said dispassionately:

"Do you suppose I wanted them to know you were hiding a bank robber and gunman? That you're a liar? That you cut your hand on purpose? Do you think they'd shut up about it? Why, everyone would know by tomorrow morning. They'd think you'd gone crazy."

"Yes," Amelia said slowly. "I see."

He glanced about the kitchen and picked up his cap.

"Well," he said, "that's shipshape."

He went out and shut the door.

"Tom," cried Amelia, "Wait, Tom."

She ran to the door and peered out into the empty dark. Nothing moved but the wind sighing across the dunes. He'd gone. He'd really gone . . .

THE first glimmer of dawn over the sea found Amelia still awake and miserable. She arose wearily, selected clothes at random, packed a wicker suitcase and went stealthily down through the quiet house and out the back door.

The town was deserted. At the station, Amelia hid behind the express shed. When the train arrived, she climbed on the single coach and slunk into a corner of the last seat. The whistle blew; the brakes were released. She saw edges of roofs, telegraph poles, the sign on Lem Turner's garage slide across the window. The train gathered speed; and the wheels clicked, "going away—going away—." From Bayberry Cove—from the sea and the dunes and the high, paling spring sky and the watch tower of the distant Coast Guard Station—from Tom . . . Amelia burst into tears . . . Presently, exhausted by her emotions, she fell asleep.

The train, stopping at the Junction on the mainland where it picked up an extra coach, awakened her. She stared drowsily out of the open window at the weather-beaten station with its circular drive of yellow sand and gravel. A battered old roadster turned in from the highway and skidded to a stop. A tall, young fellow sprang out. Amelia jerked erect.

"Tom," she cried. "Oh, Tom."

She saw his eyebrows lift in astonishment. For one dreadful moment she thought he was going by. Then he sprang up the steps of the car and was standing beside her.

"Hello, Amelia," he said casually. "I thought you'd be home in bed."

"Then you . . ." She paused. He hadn't come after her. It was an accidental, a strange chance meeting. All the gladness vanished. She took out the moist ball of handkerchief and began turning it over and over.

"Where are you going?" she asked.

"I missed the train at the Cove," Tom explained, "so I hopped over here. I'd been thinking about what you said yesterday."

Amelia was startled. What had she said? She couldn't remember; only last night and she didn't want to recall that.

"About adventurers," continued Tom. "And seeing the world, being somebody. I decided that's what I ought to do. Go to London, Paris, Africa, China; around the world."

WITH every word Amelia felt a numb despair engulfing her. Around the world? How long did it take? Years, a lifetime? She said desperately:

"But your job?"

"No future in a hole like Bayberry Cove," said Tom.

"Bayberry Cove is pretty sometimes," Amelia said timidly.

"Is it?" Tom said in surprise. "I thought you hated it."

"I thought I did. But leaving, this morning . . ." Her voice sounded small, weary, far away. "Oh, Tom," she said, "I guess I'm no adventurer."

He stood up suddenly and asked:

"How's your hand?"

"It's all right."

"Let me look at it."

He unwound the bandage and inspected the cut, whistling absently.

"Not so good," he said. "Doc Saunders ought to see it." He smiled. "Is this your bag?"

Amelia nodded. Tom lifted the battered suitcase and put his hand under her arm. Dazed, Amelia stumbled along beside him, not daring to speak, not believing, scarcely breathing. He helped her into the roadster and climbed in, starting the motor.

"Do you know where we're going?" he asked.

"No, Tom."

"We're going back to Bayberry Cove."

"Yes, Tom."

"Okay?"

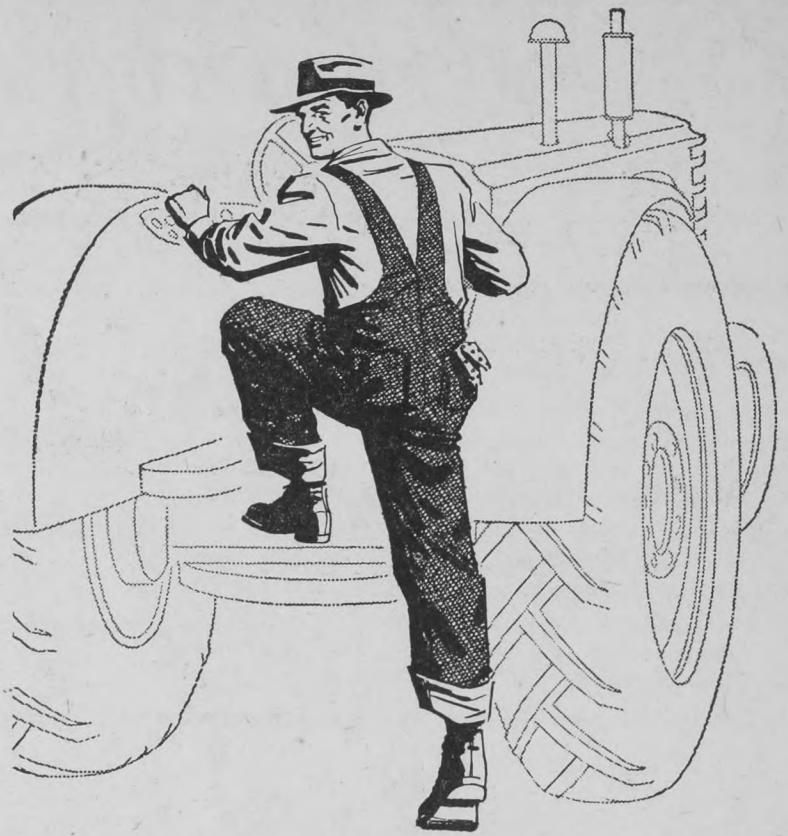
"Yes, Tom."

"We're going to be married and have a house on Ocean Avenue. In the summer we can go crabbing, in the winter we'll play dominoes. Can you stand it?"

"Yes . . . Oh, yes . . ."

"Is this an adventure," said Tom, "or isn't it?"

"Oh, yes," cried Amelia. "This is an adventure; it's a marvelous adventure."

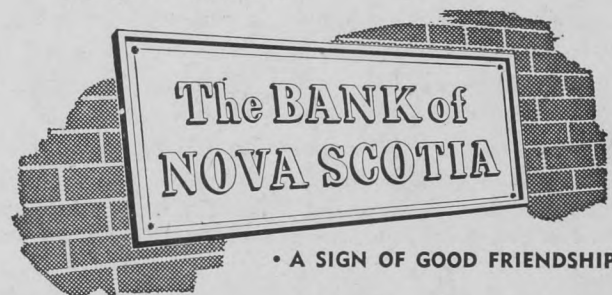


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CANADA PACKERS LIMITED

REPORT TO THE SHAREHOLDERS

The 23rd fiscal year of Canada Packers Limited closed March 29th, 1950.
(Hereafter the year is designated 'Fiscal 1950'.)

New highs were established in respect of,—

DOLLAR SALES,
TONNAGE,—i.e. pounds of product sold,
NET PROFIT.

The following is a condensed record of the year's operations.

1. DOLLAR SALES	\$327,670,647
Previous high,—Fiscal 1949	\$314,918,888
Highest pre-war year,—Fiscal 1929	97,716,701
2. TONNAGE,—weight of product sold	1,699,000,000 lbs.
Previous high,—Fiscal 1945	1,698,000,000
Highest pre-war year,—Fiscal 1938	836,000,000
3. NET PROFIT	\$ 3,480,212
Previous high,—Fiscal 1949	\$ 2,807,237
Highest pre-war year,—Fiscal 1930	\$ 1,552,071

Table I, below, compares Net Profit with that of the previous year.

TABLE I

	Fiscal 1950	Fiscal 1949	Increase
Net Profit	\$3,480,212	\$2,807,237	\$672,975
Net Profit, expressed as percentage of Sales	1.06%	.89%	.17%
Net Profit, expressed in cents per 100 lbs.	20.5c per 100 lbs.	18.7c per 100 lbs.	1.8c per 100 lbs.

NOTE ON COLUMN 3

Although the increase in Net Profit is only .17% of Sales (i.e. approximately one-sixth of 1 per cent),—or otherwise 1.8c per 100 lbs. of product (i.e. less than one fiftieth of 1 cent per lb.);—nevertheless when applied to the record volume of the year, it works out to the substantial sum of \$672,975.

A review of Net Profits since the formation of the Company (in 1927) reveals some interesting facts.

The interval since 1927 falls into 3 economic periods, viz.:—

Pre-war years —Fiscals 1928 to 1939
War years — " 1940 to 1945
Post-war years— " 1946 to 1950

As between individual years, there has been a wide variation in Net Profits. In the low year, Net Profit was \$ 384,000

That was in Fiscal 1932, the low year of the depression.

The high year, as mentioned above, was Fiscal 1950,—profit \$3,480,000

However, if periods,—and not individual years,—are compared, and if profits are expressed (as they must be for comparison) in terms of a common measure, then a surprising uniformity is revealed. Table II sets up the comparison for the 3 periods. Net Profits are expressed in cents per 100 lbs. of product.

TABLE II

NET PROFITS

	In Cents per 100 lbs.
Pre-war period—Fiscals 1928-1939	16.8c per 100 lbs.
War period — " 1940-1945	17.8c " " "
Post-war period— " 1946-1950	16.3c " " "
Average Net Profit for the whole period of Company's operations—Fiscals 1928-1950	17c " " "

NOTE: 17 cents per 100 lbs. is equivalent to 1 sixth of 1 cent per lb. That is the net profit made by Canada Packers over the 23 years of its operations.

The surprising revelation of Table II however, is that in the three widely different economic periods, the deviation from average is so minute.

Products which derive from Canadian Live Stock constitute 60 per cent of the total sales of the Company 60%

Other products from Canadian farms (Butter, Cheese, Eggs, Poultry, Fruits, Vegetables, etc.) constitute an additional 14 per cent 14%

Total percentage of products derived from Canadian farms 74%*

*The remaining 26% consists of:

1. Manufactured Foods,—mostly Canned Meats and Vegetables — 4%
The raw materials for these products also derive from Canadian farms, but processing and packaging expenses represent a large portion of their cost.
2. Products derived from imported materials, principally Fertilizer materials and Vegetable Oils 22%

It is clear that the Canadian Live Stock Producer has a vital interest in the operations of Canada Packers. The point upon which that interest chiefly centres lies in the number of cents which come back to him (the Producer) out of each dollar which Canada Packers receives for the products of his Live Stock.

This year that return (to the Producer) reached an all-time high of 85.09. This is a remarkable figure.

In its eight plants (from Charlottetown, P.E.I., to Vancouver, B.C.) Canada Packers processes the Live Stock and sells the products which consist of Meats and numerous by-products. In the course of this processing, operating charges are involved, including Depreciation of Plants, Wages, Materials, Packages, Interest, Taxes, Selling Costs, etc.

In respect of Live Stock (considered apart from all other products) these operating charges for Fiscal 1950, out of each dollar of sales, amounted to	14.43c
Canada Packers' Net Profit on Live Stock, (apart from all other products) out of each dollar of sales, was	.48c
Total out of each dollar for expenses plus profit	14.91c
Return to the Producer	85.09c

It is believed (though proof cannot be offered) that this return-to-Producer is the highest in the history of Canada or of any other country. In part the high return is due to efficiency in processing and distribution. But chiefly it derives from a cause for which the processor cannot claim the credit, namely, the extremely high level of Live Stock prices. Because of this high level, operating charges (which have also advanced, but to a less degree) add up to a smaller percentage of the sales dollar.

The high cost of foods, especially of meats, is the outstanding phenomenon of the post-war period. The Report of the Dominion Bureau of Statistics for June, 1950, states that in that month the Cost of Living Index advanced to an all-time high of 165.4. The advance for the month,—1.4 points,—was due almost entirely to the advance in meat prices.

During the course of World War II, it seemed logical to expect that post-war price trends would follow a pattern similar to that which occurred in the wake of World War I.

Though more than twenty years had elapsed, those trends were painfully recalled. Following Armistice Day (November 11, 1918) prices continued to advance for almost two years. Then (July 1920), a period of severe deflation set in which stripped most industries,—including the Packing Industry,—of all their wartime profits.

Anticipating a similar post-war collapse, Canada Packers during World War II set up substantial inventory reserves. The sums set aside appeared in the Annual Reports from year to year, and in the end added up to a total of \$4,000,000.

But no collapse has occurred. On the contrary, in the case of Live Stock, prices have steadily advanced, and now stand at an all-time high.

This divergence of price trends is illustrated in the graphs following, which depict the course of Cattle and Hog prices in the five-year periods following the two World Wars. In each graph the black line depicts prices following Armistice Day, 1918. The gray line depicts prices following V-J Day,—1945.





Price movements on a broader list of foods are revealed in Table III below. In the case of each product,—

- Column I quotes the average price, in the month of July, for the six years preceding the war. 1934/39.
 Column II quotes the average price, in July, for the six war years. 1940/45.
 Column III quotes the average price, in July, for the five years since the war. 1946/50.
 Column IV quotes the present price. (Average July 1 to 15, 1950).
 Column V quotes the percentage of advance, Column I to Column IV.

TABLE III

	Average July Price 1934/39	Average July Price 1940/45	Average July Price 1946/50	Price July 1950	Increase Col. I to Col. IV
Good Steers, live, Toronto, per lb.	6.07c	10.70c	19.62c	28.27c	366%
Hogs, B-1 dressed, Toronto, per lb.	13.20	16.65	28.35	31.75	141%
Lambs, live, Toronto, per lb.	9.55	14.84	23.12	31.00	225%
Eggs, "A" Large, Toronto, per doz.	23.75	34.50	49.95	48.50	104%
Creamery Butter, Toronto, per lb.	21.12	35.60	55.35	53.00	151%
Cheese, f.o.b. Factory, Ont., per lb.	12.60	20.50	29.37	28.00	122%
Vegetable Oil, refined, Toronto, per lb.	6.90	14.65	25.34	21.35	209%
Wheat, No. 1 Northern, Fort William, per bushel	93.00	97.50	165.62	206.00	122%
Oats, No. 2 C.W., Fort William, per bushel	42.50	46.25	75.50	101.87	140%
Barley, No. 1 Feed, Fort William, per bushel	47.37	57.00	105.12	151.12	217%

NOTE: Grain prices are based on the July cash market closings "In Store," Fort William. All other prices appearing above include any subsidies paid by Federal and Provincial Governments.

The phenomenal advance in Live Stock, as compared with other prices, is further revealed by comparison with the following:—

Advance in Cost of Living from base 1935/39 to June 1950	65.4%
Ditto for the foods included in Cost of Living computation	109 %
Ditto for general wholesale prices	110 %

Still more surprising than this phenomenal advance in Live Stock prices is the fact that consumption of meats in 1949 shows a substantial increase over that of 1939.

Per capita consumption of meats in 1939, was	114.6 lbs.
In 1949 consumption was	138.6 lbs.
Increase per capita	24 lbs.

The advance in purchasing power, indicated by this increased consumption, could occur only in a highly resilient economy. Amongst the factors which have combined to bring it about are:—

- A high rate of employment;
- Advance in the "real wages" of manual workers who, when they have ability to buy, are the heavy consumers of meats;
- Extension of Social Service payments, including Unemployment Insurance, Family Allowances, Sick Benefits, Pensions, etc.;
- Advance in national wealth brought about by the development of new natural resources;—benefits from which are shared by all economic groups.

Another factor added weight to this increase in per capita consumption,—viz. an unprecedented rate of advance in population.

In 1939 estimated population was	11,267,000
In 1949 estimated population was	13,549,000
(Newfoundland included)	

This was much the greatest advance recorded in any ten-year period in Canadian history. Together, these two factors have brought about a very marked increase in Canada's domestic consumption of meat, thereby easing the problem of maintaining a satisfactory level of price for Live Stock.

The events of the war and post-war years throw into relief a new capacity on the part of Canadian agriculture to adjust itself to changing conditions.

During the war, Canada's role was to produce maximum quantities of foods for export. The response to this demand was an outstanding feature of Canada's war effort. The high point of production was reached in 1944.

From that point forward, production (in physical volume, though not in value) gradually declined. However, for two years following V-J Day, the demand from abroad remained urgent. For Europe was hungry. The decline in exports was moderate.

Beginning with 1948, there was a sharp decline in export demand (especially from U.K.), and many fears were felt that agricultural surpluses might once more pile up, as they did in the 1930's. These fears have not been realized—at any rate, not yet.

The reduction in exports as between 1944 and 1949 is reflected in the following table.

TABLE IV
Exports from Canada

	1944	1949
Bacon, lbs.	695,757,400	67,086,600
Shell Eggs plus Egg Powder expressed in doz.	58,403,010	42,232,811
Cheese, lbs.	131,429,200	52,694,800
Canned Meats, lbs.	39,707,389	11,321,490
Poultry, lbs.	16,117,482	3,749,558
Beef, lbs.	135,333,236	291,160,182

NOTE: Beef (including Live Cattle converted to a Beef basis) is the only product in the above table which shows an increase. The explanation is that, in 1944, shipments of Beef from Canada were entirely to the U.K. (An embargo forbade shipments to the U.S.) In 1948 that embargo was lifted and an immediate flow set in of Live Cattle and Beef to United States. In 1949 shipments were as follows:—

Live Cattle	389,131 head
Calves	31,524 head
Equivalent dressed weight	189,940,982 lbs.
Shipments of Dressed Beef	101,219,200 lbs.
Total	291,160,182 lbs.

That a (presently) unlimited outlet to U.S. exists for Canadian Cattle is the most important single element in the Live Stock situation. It is by reason of this outlet that Cattle prices are at an all-time high. And there seems no immediate likelihood of the outlet being curtailed.

It is true that in the past the U.S. market for Canada's surplus Cattle has proved undependable. It has failed just at the times when the need of it was most sorely felt.

Has a new era set in, in respect of Live Stock, on the North American continent?

Some students of the situation believe this to be the case. Their argument is somewhat as follows:—

"The present human population of the United States is 152,000,000 and it is increasing at the rate of 2,000,000 per year.

"At the same time, purchasing power per individual is advancing. So that the demand for meats is 'compounded',—(increased number applied to increased per capita consumption).

"It is doubtful whether U.S. Live Stock production can be stepped up to correspond with this 'compounded' demand."

This is the argument. It cannot be discussed at the end of an already long report. However, one reservation must be kept in mind. The argument is based upon the premise that North America (United States, Canada, and possibly Mexico) will be maintained as a closed area.

South America, Australia and New Zealand produce a huge surplus of meats. If North American markets were opened to meats from these sources, a drastic price decline would be the immediate result.

The factors involved are, therefore, political as well as economic, a fact which introduces prophecy as well as economics into the discussion.

EMPLOYEE RELATIONS

During the year, two changes have made for an advance in the 'real wages' of hourly-paid employees. They were:—

1. An increase of 6c per hour in wage rates;
2. An increase in the sums exempt from, and a consequent reduction in, Income Tax.

Because of the numerous factors involved, an exact formula for computing 'real wages' cannot be laid down.

However, close approximations can be made. The following table is the most accurate record possible, for the past decade, of the 'real wages' of Canada Packers' hourly-paid Employees, 1939 being taken as base.

TABLE V

ESTIMATED 'REAL INCOME' OF HOURLY-PAID EMPLOYEES

1940	5.2%	decline from 1939	
1941	2.5%	"	"
1942	2.6%	improvement over 1939	
1943	7.2%	"	"
1944	9.4%	"	"
1945	14.1%	"	"
1946	12.0%	"	"
1947	20.1%	"	"
1948	20.9%	"	"
1949	28.3%	"	"
1950 to date	30.4%	"	"

(Negotiations for the coming year are in progress as this Report is being prepared.)

Directors cordially acknowledge that in the year under review, employee relations have been pleasant and co-operative. They feel that plant efficiency has been higher than at any previous time in the history of the company. This has resulted in increased production, which in turn has made possible improved returns both to Employees and to Shareholders.

As between these two groups, the benefits of the record year have been divided as follows:

To Employees, in addition to regular wages and salaries, which are at least on a par with the highest paid in the industry:

Year-end Bonus	\$1,500,000
Pension contributions	1,385,706
Total	\$2,885,706

To Shareholders:

Regular Dividends	\$1,000,000
Bonus Dividend, at year-end	400,000
Added to Reserves	2,080,212
Total	\$3,480,212

Toronto, July 15th, 1950.

J. S. McLEAN,
President.

Extra copies of this report are available and so long as they last, will be mailed to anyone requesting them. Address to Canada Packers Limited, Toronto 9.

Respite for the Fresh-Water Pirate

The jackfish of the early settlers has become an economic factor in Alberta

by JOHN PATRICK GILLESE

IT was mid-August; and the south-west cove of Lake Wabamun was deep and brown. The weeds were less than 50 feet away. The spoon I pitched out splashed where the shore wind was making a ruffle. I let the hook settle, then began to tow on the line. There was a shadowy movement, a lightning flash of creamy-white underbelly, the snap of tiered teeth against steel as the great jaws tried to disgorge the barbs. Boring and churning water, I hauled him into the canoe—a great northern pike, more popularly called a "jackfish" or "fresh-water shark"—a name that suits him well. Walton, who knew fish better than anyone else, calls him the "Tyrant of Fresh Waters."

As we hauled pike in steadily, Les, a newspaperman, remarked: "Motor-boats have been skimming out here all day without luck. This is the first time I ever saw anyone catch pike by just throwing a hook out of a canoe."

I explained to him it was the heat. In August, pike like to lie in the weed beds, near riffles.

Where weeds snag the hook, a rod is a headache. Quick reeling is no good—the old pirates get wary after months of shaking off barbs. You've got to let your hook sink, then pull it, hand over hand, and the waiting raiders think it's live bait, sure. The nearness of a still boat means nothing to the fresh-water shark. Sometimes, as I've pulled the hook to the boat's edge, ready to throw again, a great white underbelly would appear below, the trap-like jaws almost swallowing the hook.

As soon as we drifted out of that shadowy patch of weeds and water, there were no more fish. We'd paddle back and, sensing the shadows where the pike lay, throw again. It's the same in all the northern Alberta lakes in summertime. The man who knows the pike's nature gets a fish every time.

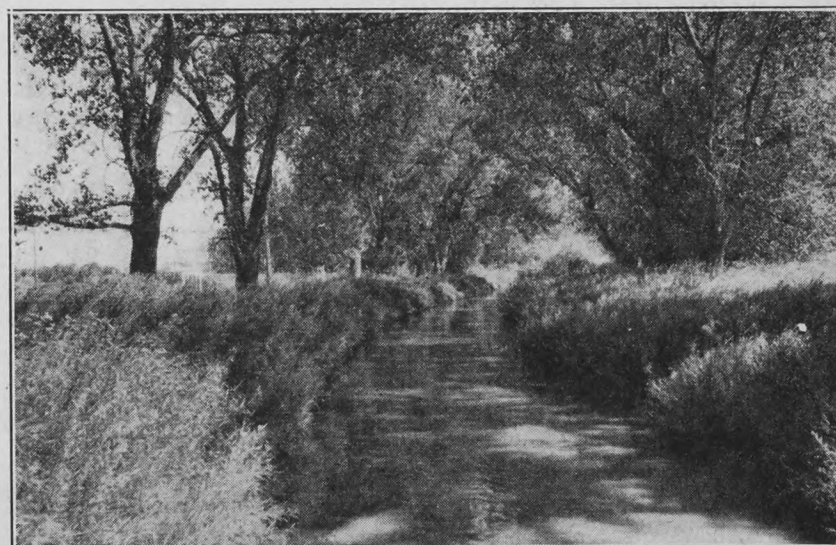
If they're biting, bait is no problem. When they're running up the creeks to spawn, I've had pike jump a foot out of water to get at my hook. I've seen them, in early summer, "torpedoing" baby mallards on a river—picking them off one at a time, working from the rear forward, despite the anxiety of the duck and drake.

Infesting almost all the rivers, lying in the bigger lakes (they've been cleaned out of some of the smaller lakes, where anglers want perch, or other fish) the pike is undoubtedly the most common sports fish of the West. Migrating up every river and creek in the springtime to spawn, a percentage will always stay behind, providing thrills to Sunday afternoon anglers when even the suckers have deserted the hot, drying creeks for the lakes.

THOUGH a new day seems to be dawning for the pike, fishery departments classify the underwater killer as a "coarse" or "forage" fish—in Alberta, definitely, not to be classed with the province's fine trout and famous whitefish. Since everything that moves is food for the maw of the reptilian-headed shark—trout and whitefish havoc is especially grim where jackfish numbers are great—the government unofficially gives its blessing to anglers who go after pike. Willow poles in the hands of kids, lines through the ice in winter, great nets on the lakes—all take an enormous yearly toll of the ever-hungry killer. The closed season is limited and generally, Alberta wardens tell me, is enforced mostly to protect the spawning of other fish.

Frogs, baby ducks, young muskrats, his own children—these are all part of the daily diet of the big-headed pike. In Alberta lakes, pike stomachs have yielded such assorted oddities as wedding rings, cigarette lighters, wrist watches, five-barbed plugs, small steel files, pen knives and 50-cent pieces—all indigestible objects bearing mute testimony to the appetite and iron constitution of Mr. Pike.

Martin Hunter, a veteran westerner who entered the Hudson's Bay Company in 1863 and retired in 1903 as a commissioned officer of 20 years standing, has left eyewitness accounts of the incredible greediness of the cannibal. Paddling quietly on the lake one day, Hunter made out "the fin of some fish moving sluggishly" near the surface of the water. "I got close enough to see it was a pike with a whitefish half protruding from its mouth and almost dead from suffoca-



An irrigation system does more than ensure crops. It transforms the look of the countryside as this ditch at Lethbridge shows.

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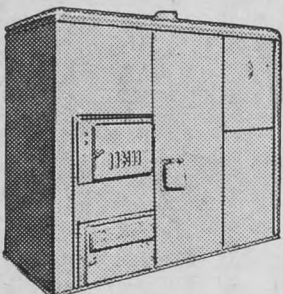
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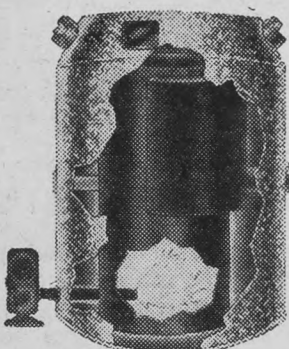
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tion. This," thought Hunter, "is a rare occurrence for a person to witness, and gently reaching out my hand I inserted my thumb and forefinger into the eyesockets and lifted both into the canoe."

EXAMINATION revealed that the whitefish was two-thirds the pike's own length; the half "inside the mouth was quite decomposed, while the part in the water was comparatively fresh." Hunter then opened the stomach and found the remains "of a smaller whitefish, almost quite digested, which had been swallowed whole and would have measured nearly a foot long." Which, to anyone who knows the pike, is no fish story.

Scientists call this razor-toothed pirate *Esox Lucius*, cousin to the lordly muskellunge. Logically, few creatures care to tangle with this cunning underwater terror. Ducks and muskrats learn to avoid paddling past submerged logs or big rocks where some big one has chosen living quarters for the summer. Man is the pike's chief enemy, though, in turn, one slash of those great rows of teeth—even when the pike is lying stunned in a boat—can leave an angler with an injured hand for weeks.

Sheer gluttony gets the pike into trouble, but there is a season when he is vulnerable to other methods of attack. Not many years ago, lakes were "cleaned" of pike in a simplified manner. People paddled around the bays all summer long and shot the pike while they spawned and basked in shallow water. When three or four were clustered together, as Hunter records, "a shot would not kill the whole, but it would stun them so we could finish them off with the paddle." One such, destroyed by his party, measured 39 inches, weighed 35 pounds—and such big ones were kept for eating.

Half a century ago, too, Indians—boys and girls and old women—were given trolls and lines and paid a cent apiece for every pike over a foot long. Thousands of large pikes were thus destroyed daily throughout the West. The Indians usually took out their pay in cheap "bullseye" candy, priced at a cent apiece.

Today, in the U.S., when a lake is to be cleaned of pike, gigantic netting operations are used; the balance of the fish are poisoned.

On the whole, however, the economic status of the pike is being recognized. From Alberta waters alone, in the last two fiscal years for which figures are available 1,262,036 pounds of pike were marketed commercially. Sold frozen and filleted, they found a ready buying audience in the large cities, whereas not long ago they were eaten mostly by farmers and ranchers isolated in areas where no other fish "ran" for the springtime spawning. Filleted, right after being taken from the water, and fried, there is no better eating.

By the same token, while waterfowl conservation authorities still libel the pike as the No. 1 duck-killer, more sports-fishing fans than ever are turning to him as the fightingest, surliest fish in fresh water, always ready to give battle. With more provinces inaugurating even short closed seasons and daily limits, it would seem that his fighting heart has at last earned the pike respect and respite after decades of persecution.



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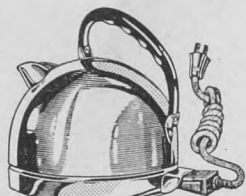
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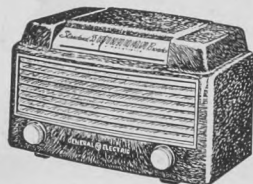
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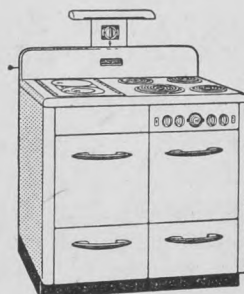
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Stem Rust of Wheat Again

A potentially serious threat to Canada's wheat crop comes from an unexpected outbreak of a virulent strain of stem rust

THE chances are that on the farms of the prairie provinces there are many young folks today who do not recall the last serious epidemic of stem rust of wheat. This occurred in the year 1935. Previous to that time rust had been present in the wheat fields of western Canada every year to a greater or lesser extent, and in some years, of which 1916 was also a notable example, stem rust of wheat lessened the value of Canada's wheat crop by a great many millions of dollars.

The annual loss was so great that scientists early turned their efforts toward the development of varieties of wheat resistant to stem rust, and in 1924 the Dominion Government established a Rust Research Laboratory at the University of Manitoba, Winnipeg. The work of the laboratory naturally fell into two divisions: The study of this and other diseases, centered in a laboratory of plant pathology; and plant breeding, established in the laboratory of cereal breeding. Today, though these laboratories work on many diseases of other crops as well as wheat, they are still often spoken of jointly as the Dominion Rust Research Laboratory.

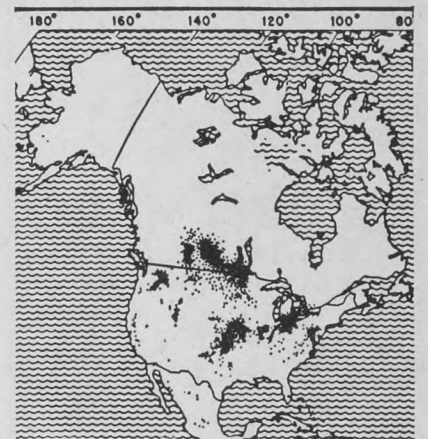
So far, these laboratories have produced four varieties of rust-resistant wheat. The first was Renown (1936); the second, Regent (1939); the third, Redman (1947), and the fourth, Saunders (1948). Meanwhile, Thatcher was produced in Minnesota (1935), and Apex at the University of Saskatchewan (about 1936). As these varieties appeared, especially Renown, Thatcher and Apex, most of the susceptible spring wheat varieties disappeared rapidly, and there has been no serious epidemic since 1935.

This year our security from rust has been very rudely shattered, although the infestation of 1950 may not result in any appreciable effect on the crop as a whole. What sends shivers up the backs of the plant breeders and others who understand stem rust of wheat is the fact that the rust has appeared in an extremely virulent form, which had been confined hitherto to the barberry bush. Plant pathologists have so far recorded some 270-odd strains of stem rust of wheat, but only two or three of these have been serious enough to require any attention. Ten years after the Rust Research Laboratory came into existence, only two, Nos. 21 and 36, were giving much concern. Plant breeders and pathologists have known for a long time about the virulent strain, 15B. They had, as time and opportunity permitted their limited numbers and facilities to do so, begun the work of breeding for resistance to it, but more immediate problems were always exerting claims on them, so that, while at the present time they have some promising material, another four or five years will be required before they can produce a variety resistant to this strain and available in sufficient quantities for commercial purposes.

RUST comes to the Canadian prairies from the United States. So far as we are concerned, it is a wind-borne disease. It may start in

Mexico about March 1, and reach us about the first or second week in June, by following the natural succession of the wheat harvest through Mexico, Texas, Oklahoma, Nebraska, South Dakota and North Dakota. It is unfortunate for us that the wind blows contra-clockwise around a low pressure weather area, because this means that if there is a low pressure area anywhere west of the Red River in Manitoba, winds from the south may blow rust spores from the wheat states south of us into the prairie provinces, provided other climatic conditions such as temperature and humidity have been conducive to the development of the disease.

NOW that the present virulent form of rust, 15B, has broken away from the barberry and our rust-resistant varieties are not resistant to this particular strain, the threat to the wheat crop can be very serious in any year, if weather conditions are favorable to the develop-



(After USDA-OFAR)

Each dot represents a million bushels of wheat production.

ment of the disease. The primary factors with respect to weather are rainfall and temperature. Other factors, such as direction and velocity of the wind, number of rainy days, number of dewy mornings, and the humidity of the atmosphere, may also be important.

Our safeguard lies in the fact that a combination of all favorable factors is very rare. In 50 years only three first-class epidemics have been experienced in North Dakota: in 1904, 1916 and 1935. Substantial losses were experienced in other years, but did not combine to produce a real epidemic.

Another element of uncertainty is as to whether the red rust spores from the 15B strain can winter over in Canada. There were traces of stem rust in the states of Washington and northern Idaho this year. Although all the stem rust present this year in Canada and the United States is not necessarily of the virulent 15B type, it is known to be rather widely distributed. If weather conditions in Minnesota and North Dakota were sufficiently favorable, it is quite possible that a substantial quantity of spores could be produced in this area, to be blown southward in late summer and fall, where they could persist over winter in more favorable climatic conditions and multiply more rapidly as a threat against the crop of 1951.



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The Countrywoman

YOUR editor has been afforded the opportunity to travel overseas. The purpose of the trip is to attend the Sixth Triennial Meeting of the Associated Country Women of the World, to be held in Copenhagen, Denmark, September 9 to 16. The Canadian party will be met in Liverpool and entertained by W.I. groups as it travels north through England and Scotland.

There will be some 40 delegates and visitors in the party from Canada which is headed by Mrs. H. Morton, President of the Canadian Federation of Women's Institutes. In Denmark and Holland, arrangements have been made for groups of rural women to meet the visitors from this continent. In some cases they will be afforded hospitality in homes of country women. It is my honor and privilege to go as an accredited delegate of the Women's Institutes of Manitoba and to be awarded by them an honorary life membership certificate and pin, before leaving. I hope to have much of interest to write concerning this visit for the readers of The Country Guide.

—AMY J. ROE.

EVERY summer thousands of country women from all parts of England and Wales fill the Royal Albert Hall in London for the annual meeting of the National Federation of Women's Institutes presided over by the chairman, the Countess of Albermarle. Sometimes Queen Elizabeth is present, for Her Majesty, who is an Institute member, visits the Women's Institute near her country home at Sandringham, in the English county of Norfolk, when she is in residence there.

This year's meeting was the thirtieth to be held in London. It was in 1915 that the late Mrs. Alfred Watt, who had been associated with Women's Institutes in Canada, carried the idea to Britain and helped organize the first one in Britain—in Anglesey, an island off the coast of north Wales. By 1917, 137 Institutes had been formed, and today there are 7,374 Institutes in England and Wales with a membership of approximately half a million, and a further 20 branches in the Channel Islands. Scotland and Northern Ireland have their own organizations. Since the end of the war membership has increased by 135,000, which, is the chairman pointed out in her annual address, means that every third member is a recent member.

It is not surprising that Women's Institutes have taken root so strongly in Britain's rural life, for they bring color and interest and knowledge to the average country woman. Members are encouraged to help each other: they have equal privileges, and pay small annual subscriptions. Women's Institutes are non-political and non-sectarian and they are open to any woman who wishes to join. Officers and committees are elected annually and democratically by secret ballot.

Each Institute holds a monthly meeting which is partly instructional, partly recreational. It may be in the parish hall, in a farmhouse kitchen, or in somebody's parlor. Members choose their own programs for their meetings and when the Institute business is done, they may listen to a lecturer telling them about another country or about a current problem, or they may watch a demonstrator explaining some new method of cookery or handicraft. After the talk comes tea, community singing, and games, or an entertainment staged by the drama section. A meeting is a highlight in the average country woman's life: she anticipates it eagerly and makes her plans so that she is able to attend.

In country places, villages and small towns the Women's Institutes in Britain provide interest for country women and develop talents and skills

by KATHLEEN COURLANDER

Speakers and demonstrators, as well as visiting organizers, are supplied by the County Federations which have offices in large towns and are links between local Institutes and the N.F.W.I. headquarters in London. In addition to numerous activities, they arrange schools for women who aspire to become local councillors, and handicraft classes and exhibitions.

The Women's Institutes are justly proud of their skill at handicrafts. Before World War II, they held an annual exhibition and sale of their work in London at which they displayed their embroidery, their leather work, lace work, toys and quilting. The members are now planning their first postwar exhibition in London in 1952. During the intervening years, in keeping with the spirit of "austerity" Britain, they have been essentially practical and have held ingenious "Make Do and Mend" sessions. Schools for household jobbery, which teach how to repair furniture, carry out simple electricity or plumbing repairs, and paint and redecorate shabby rooms, have been welcomed.

In many English market towns there are Women's Institute stalls for the sale of garden produce. The members of the Institutes have shares in the market, and the vegetables, fruit and eggs they take there are priced by the market Controller. Most of the profits are returned to the growers, only a penny or two in the pound being retained by the Controller to cover overhead

have since been organized on a peacetime basis. The Ministry of Food provide the sugar at these centers and all kinds of preserves and canning are undertaken. The products are then sold to the public on the Women's Institute market stalls, or at specially appointed times and places in the villages. Ordinary retail prices are charged. But to recompense members for their services, those who work at the centers are allowed to buy 25 per cent of each day's making. Jam-making and canning clubs are also popular. In these the fruit and sugar are pooled and the work and expenses are shared, the jam and canned fruit of course being the members' own property.

The Women's Institutes have always striven to improve rural amenities and they have exercised a profound influence in country communities. Their campaigns for improved conditions have often been successful. The provision of a better water supply where this is needed was the subject of a campaign recently completed; better transport facilities for remote villages was another. In both cases the evidence used to press their case had been obtained from comprehensive surveys carried out by members. From the answers received to questionnaires sent out to 6,747 villages in England and Wales last year, a booklet "Your Village" was compiled and published in June, 1950. It reflects life of today, conditions under which most country people live and work, and how much the Institutes have already done, or are doing, for their villages.

An important milestone in the development of Women's Institutes came in 1948 when their own college, named Denman College after their former chairman, Lady Denman, was opened. This is a charming house in the English county of Oxfordshire, bought with the help of the Carnegie United Kingdom Trust. A member can stay there for a few days or a week, taking a student course of a practical or, perhaps, of a more intellectual nature. From the first week Denman College was a success, and there is always a stream of members waiting to go there, as well as many visitors from overseas Institutes. A stay in the College gives the individual member an opportunity of discussing mutual problems with others and she returns home refreshed, and with a wider outlook.

Upper: Jam-making and canning clubs are popular.

Lower: Watching a glove-making demonstration, Denman College, Oxfordshire.



expenses. Recently, members of the Women's Institute at Finchingfield, in the English county of Essex, opened a produce stall, in the Bermondsey Settlement in South London, that exists to help poor people. Local housewives soon discovered the country produce and expressed their appreciation.

During World War II the Women's Institutes ran Fruit Preservation Centers for Britain's Ministry of Food, which

Some of the Canadians going overseas to the Copenhagen meeting plan on visiting Denman College. Lady Susan Tweedsmuir has sent a warm invitation for some of the party to visit at her home.

Hot Din ON

Quick frozen meals, heated and served en route, make delectable eating for Canada's airline passengers

by ETHEL ANNA SANKEY

YOU can have your pie in the sky—apple, peach, even your favorite blueberry pie—fresh any month of the year, thanks to the new quick frozen meals which Canadian airlines have inaugurated in their service.

Meals en route is one of the many "courtesy services" that passengers receive when they travel the airlines and the problems of feeding airborne passengers have challenged the best minds in the dietetic world. Very limited space for preparing and serving meals, the need to appeal to the appetites of people who may be slightly nervous about flying, the strict regulation not to add one ounce of unnecessary bulk or weight to the air cargo, the necessity of planning equipment and menus to withstand rough flying weather, plus the fact that passengers in flight are more than usually sensitive to the color of foodstuffs—all this is enough to send anyone into a "tail spin." Yet all these factors and many more must be considered when preparing a meal for the airline service.

Aero Caterers, the first plant of its kind in Canada, met the challenge with their delectable quick frozen meals. Their dietitian, Miss Edna Raynor, is responsible for the preparation of some 4,000 meals each week for the fastidious clientele who travel Canada's airlines. As "test pilot" she admits, with a rueful smile, that during early experimental work at the plant there were times when she was

"flying

The first meals served on the airlines were prepared in the kitchens at the airport. These sandwiches, soups, meals and casseroles contained in a "fiddle" (a strip cut out with a drinking glass, from any dish that might

After a time these meals became monotonous, especially for the passengers and the crew, and they gave way to the idea of a salad plate which could be prepared in the flight kitchen and easily carried on board. The next step was a hot dinner which was very welcome on the long runs. This hot meal was cooked in a casserole dish just prior to departure of a flight and then taken on board and kept warm in a special portable oven called a Harrington. But meals prepared in this way tended to dry out and lose some of their appeal and if a flight were cancelled because of bad flying

by Trans-Canada on their American flights, their Atlantic service and Trans-Canada routes and by Canadian Pacific Airlines on their Hong Kong flight. And all these meals are prepared in Winnipeg!

The foodstuffs are bought locally, Winnipeg being an ideal place for the plant because of its central location and the ease with which meals can be transported by air to either coast. Also, it is a good center at which to buy foods economically. The same standard of quality for all meals throughout the airlines is maintained

quick

scalloped. Dinner No. 6—Roast beef with gravy, macedoine of vegetables, croquette potatoes.

Dinner No. 7—Salmon steak with parsley butter, potato chips and green peas.

Dinner No. 8—Fillet of sole, potato chips and green peas.

In addition two breakfasts are prepared:

Plain omelet and French toast with cocktail sausage or with bacon.

THE numbering of various meals is important both to the plant and the stewards of the airline companies. When ordering meals an airline company could readily ask for 100 No. 6 dinners or 40 No. 2 breakfasts, but that's not where the convenience ends—there's the little problem of making sure that an air passenger who will require two meals en route, say from Montreal to Vancouver, is not served the same menu twice in the same day! So a system of rotation is followed which works in this way: Montreal dinner on Monday may be No. 1, on Tuesday it will be dinner No. 2, but Winnipeg dinner on Monday is No. 5, on Tuesday it will be No. 6. On Fridays all flights carry a fish menu. Only the menu of the day may be served unless special arrangements are made at least two hours before the flight.

Meals for the Orient service presented a whole new set of problems, for Orientals do not always care for American style meals. What does a Chinaman eat for breakfast? Aero Caterers paid a visit to Winnipeg's Chinatown to answer that question and these two menus were found satisfactory:

Roast pork, halibut and steamed rice, or

Chop suey (American version) and two servings of rice.

Preparing rice and quick freezing it presented a challenge. Not all varieties of rice took kindly to the processing, some varieties became soggy and dull colored, but it was found that the long grained Flag rice would stay fluffy and white under all conditions.

Right: The plates are covered with aluminum foil to seal in the flavor, then packed in boxes and frozen.

Below: Quick frozen meals are enjoyed by passengers aboard a Trans-Pacific Airliner.



[T.C.A. photo.]



[C.P.A. photo.]

when all the meals are prepared at the same plant.

Aero Caterers prepares the main courses for eight different dinner menus, each menu is numbered in this way:

Dinner No. 1—Fillet mignon with mushroom sauce, macedoine of vegetables, Parisienne potatoes.

Dinner No. 2—Veal escallops with sauce Italienne, carrots Julienne, Duchesse potatoes.

Dinner No. 3—Braised steak with sauce Madere, Mexican corn, mashed potatoes.

Dinner No. 4—Roast spring chicken with

Make Better Easier!

Hood Flour

By
Rita Martin

4 teaspoons granulated sugar
4 teaspoons salt
4 tablespoons shortening or lard
11 cups sifted ROBIN HOOD FLOUR

DISSOLVE yeast in $\frac{1}{2}$ cup lukewarm water. If dry yeast is used, add 1 teaspoon of sugar for each package of yeast, sprinkle yeast on top of water and let stand 10 minutes; then stir.

ADD sugar, salt and shortening to scalded milk. Add $1\frac{1}{2}$ cups cold water and allow to stand until lukewarm.

MEASURE flour into large mixing bowl; make a well in centre of flour.

ADD yeast to milk and water mixture; pour into well in flour and stir with large spoon until liquid is absorbed. Then, using hand, mix until dough is smooth and comes away readily from the inside of bowl.

TURN dough out on lightly floured board and knead for 8 to 10 minutes.

PLACE dough in warm, greased bowl; cover with damp cloth and set in a warm place ($75 - 85^{\circ}\text{F}$); let rise until double in bulk ($1\frac{1}{2} - 2$ hours).

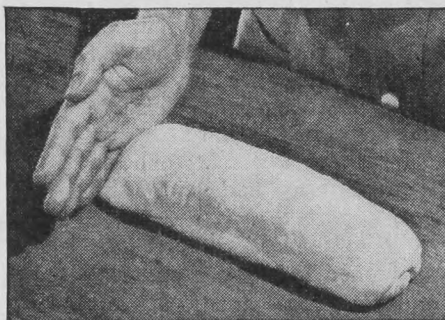
PUNCH dough down in bowl. Cut in 4 equal parts, round up, cover and let rest 10 minutes on lightly floured board.

SHAPE into loaves and place in well greased loaf pans. (See easy illustrated method at right).

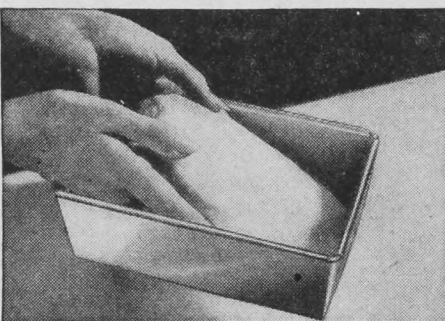
COVER lightly and allow to rise in warm place until double in bulk ($1\frac{1}{2} - 2$ hours).

BAKE in hot oven, 400°F , 10 minutes. Then reduce temperature to 375°F and continue baking for an additional 40 minutes.

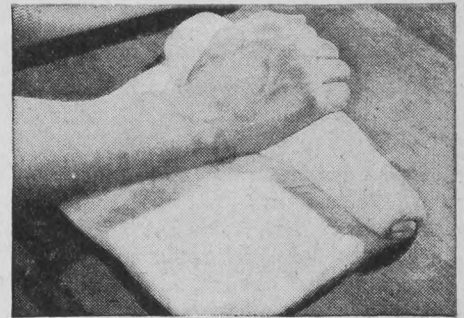
YIELD: 4 loaves.



Step 3. Seal ends of the loaf by using the side of the hand to get thin sealed strip.



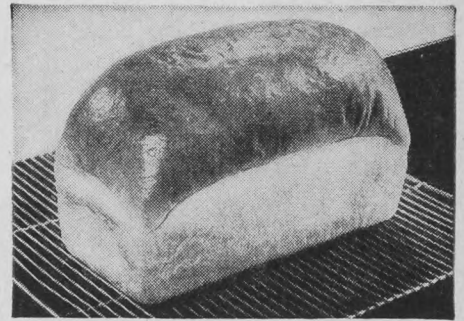
Step 5. Place shaped loaf, with seam side down, in well greased bread pan.



Step 2. From upper edge, roll dough toward you, jelly roll fashion, sealing dough with heel of hand after each roll of dough. (About four turns will bring you to last seal.) Be sure to seal final seam on bottom of loaf.



Step 4. Fold sealed ends of loaf under, using fingers, as above. Avoid tearing dough.



Step 6. Proceed in usual way for raising and baking... for a perfect loaf every time!

9 Out of 10 Women Say New Robin Hood "Rolled Dough" Method Makes The Finest Bread Ever

● Now! Home bread baking easier than ever before — with never-fail results! Women who bake bread several times a week — women who had never baked bread before — all agree that this new Robin Hood "Rolled Dough" Method is easy, gives a perfect loaf every time.

With this new method you get a loaf of bread that's bigger — looks better — tastes better than any other home-baked bread.

It was originated, developed and perfected by Rita Martin, famous home economist, for use with Robin

Hood flour. You cannot get the same perfect results with any other flour. Only Robin Hood Flour and the Robin Hood "Rolled Dough" Method together can produce such large, uniform loaves.

Use the recipe for Robin Hood White Bread on this page — follow the easy step-by-step Robin Hood "Rolled Dough" Method — and we guarantee you will make the finest loaf of bread ever.

Get Robin Hood Flour from your grocer right away and try this new way to make better bread.

Robin Hood Flour

Used by 4 out of 5 Baking Contest Winners



TUNE IN... "THE ROBIN HOOD MUSICAL KITCHEN" ... Mon., Wed., Fri. — (TRANS-CANADA NETWORK)

Thus these meals for the Orient service, which are prepared in Winnipeg, go air cargo to Hong Kong and are served to the passengers on the return flight to Vancouver.

DURING the winter season the foodstuffs purchased at the plant are of the quick-frozen variety. The entire process briefly summed up then becomes: purchase frozen foods, thaw, cook, freeze, heat, eat! With quick-frozen vegetables the plant eliminates the work of preparing vegetables yet always has attractively colored vegetables at all seasons of the year. In the growing season all fresh vegetables are used. Meats are bought in large portions, cut into roasts or steaks, cooked, then quick frozen.

When the individual portions of food stuffs for one certain menu are all cooked, they are then assembled on a "sky plate," a very appropriate name for the little nine-by-seven-inch lightweight aluminum plate which holds the attractive meals. These "sky plates" are divided into three divisions, one for the meat and the other two for vegetables. The assembled meal is then quick frozen and after that each meal is "foiled," which means it is covered with a heavy sheet of aluminum foil to seal in the flavor and prevent any drying out of the food. On top of the foil is pasted a strip of paper bearing the number of the meal and the date on which it was prepared. Now the meals are packed into cartons with dry ice, a carton nine inches square holds eight meals and they are packed eight small cartons to a large carton to contain 64 meals. The meals then go from the plant to the airport where they are held in the quick freeze lockers of the flight kitchens until they are required for a certain flight out of Winnipeg, or they may be destined to go as cargo to the east or west coast to be used on flights originating there, for the dry ice will hold the meals safely frozen for 36 hours until they reach the designated airport.

We're up in the air now flying on the Vancouver flight out of Winnipeg. It is the dinner hour and the stewardess is preparing the meal for her passengers. She turns on the power in her little oven and takes 12 of the quick frozen meals right from the cardboard carton and places them on the wire racks inside the oven to be heated or "processed." This oven which is about 16 inches square has a small fan set in the back of it which circulates the heat equally to all parts of the oven. The meals are processed

for about 13 to 17 minutes at a temperature of 375 degrees and while this is going on the stewardess prepares her trays with a snowy white cloth and a plastic "fiddle" into which she fits the various dishes containing iced Canadian apple juice, celery salad and mayonnaise, then last of all she removes the steaming hot meal from the oven and places it on the tray ready to serve a passenger. We recognize our "sky plate" containing a delicious dinner of half a broiled chicken with mashed potatoes and buttered green beans which look as if they had been picked from a spring garden. Dessert is strawberry shortcake and coffee, and all this while we are speeding through the air at an altitude of 7,000 feet.

All kinds of problems were met and solved at AEro Caterers as it pioneered its way in the new quick frozen meals. Eggs proved difficult; the fried egg would curl and tend to become tough after being frozen, the scrambled eggs turned green when they were processed. Both had to be omitted but the best bet was an omelet which satisfied all tests except it tended to stick to the "sky plate" in a disagreeable way. It was found that if the omelet were quick frozen on a small sheet of aluminum foil first, instead of in a "sky plate," it would build up a slight film of ice on the underside and so would not stick when transferred to the "sky plate." I tasted an omelet on a breakfast menu. It was light, moist and tasty, indeed all that an omelet should be, yet I noticed from the date slip that it had been prepared a month previously. Also it was found that vegetables should not be drained too dry for the moisture will prevent sticking.

Experiment showed that frozen meals could be safely kept for a year except menus with pork, for the fat tends to break down in about six months. It was found that freezing intensifies seasoning and coloring of foods so that a pear colored slightly with cochineal, to make it more attractive, became a brilliant red when frozen and had to be discontinued. The problems were big and small but each one had to be ironed out to make possible the smooth, efficient running of the plant and the wholesome eye-catching meals which were the result of hard work and experiment. And this experimental work will go on.

When Miss Raynor set a breakfast and a dinner before me steaming hot as I sat in her office, I suddenly became carried away by the great possibilities of such meals for homes. Could a town or country housewife who had taken a job outside her home, stop at the store on her way home and ask for "Two dinners, No. 4, please"? Would it be possible for a mother to prepare the menus for the entire meals for her family for a week, put them in her quick freeze unit and go off on a much needed holiday, knowing her family would be well fed during her absence? The next step will probably be that quick frozen meals will be supplied to restaurants to be served to their customers at a few moments' notice. There seems to be little obstacle in the way of these meals being available for home use. The special oven used on the airlines is not necessary, for meals can be processed in an ordinary oven by giving them a little longer time. Your turn next, Mrs. Housewife!

Greet the Gang!



Munchy Wiener Rolls...

**no trick at all
with new fast
DRY Yeast!**

● For your next get-together, pull a trayful of these steaming rolls out of the hot oven—pop in the "weenies" and ply the mustard. My! they're marvellous—and so easily made with the wonderful new Fleischmann's Royal Fast Rising DRY Yeast!

If you bake at home, *all* your yeast problems are at an end with this new Fleischmann's Yeast. Unlike old-style perishable yeast, it doesn't lose strength, needs no refrigeration! Keeps *full-strength*, *fast-acting* on your kitchen shelf. Buy a month's supply—ask for Fleischmann's Fast Rising DRY Yeast.

Piping Hot WIENER ROLLS

Makes 3 dozen rolls

Scald

- 1 1/2 cups milk
- 1/3 cup granulated sugar
- 3 teaspoons salt
- 1/2 cup shortening

Remove from heat and cool to lukewarm. Measure into a large bowl

- 1 cup lukewarm water
- 2 teaspoons granulated sugar

and stir until sugar is dissolved.

Sprinkle with contents of

- 2 envelopes Fleischmann's Royal Fast Rising Dry Yeast

Let stand 10 minutes, THEN stir well.

Stir in lukewarm milk mixture and

- 3 well-beaten eggs

Stir in

- 4 cups once-sifted bread flour

and beat until smooth; work in

- 4 cups (about) once-sifted bread flour

Grease top of dough, cover and set in warm place, free from draught, and let rise until doubled in bulk.

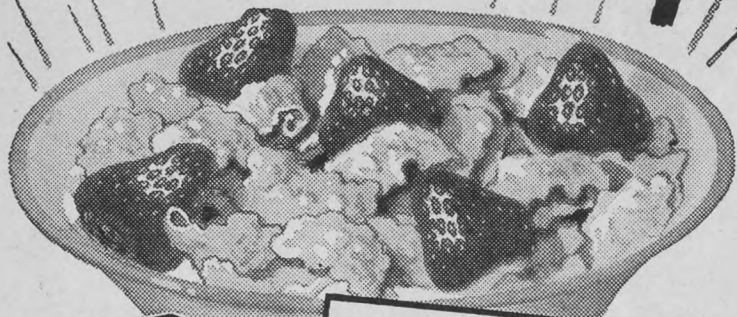
Turn out dough on lightly-floured board and knead lightly until smooth. Divide into 2 equal portions; cut each portion into 18 equal-size pieces; knead each piece into a slim finger. Place, well apart for crusty buns—closer together for soft-sided buns, on greased cookie sheets. Grease tops. Cover and let rise until doubled in bulk. Bake in hot oven, 425°, about 15 minutes.



[T.C.A. photo.]

A precooked quick frozen meal ready to serve with all the trimmings.

Oven*FRESH!



* Deep-toasted . . . extra-crisp . . . and OVEN-FRESH! That's QUAKER Corn Flakes. All the rich corn flavor and zesty tang are kept OVEN-FRESH in the big blue and yellow flavor-sealed package.

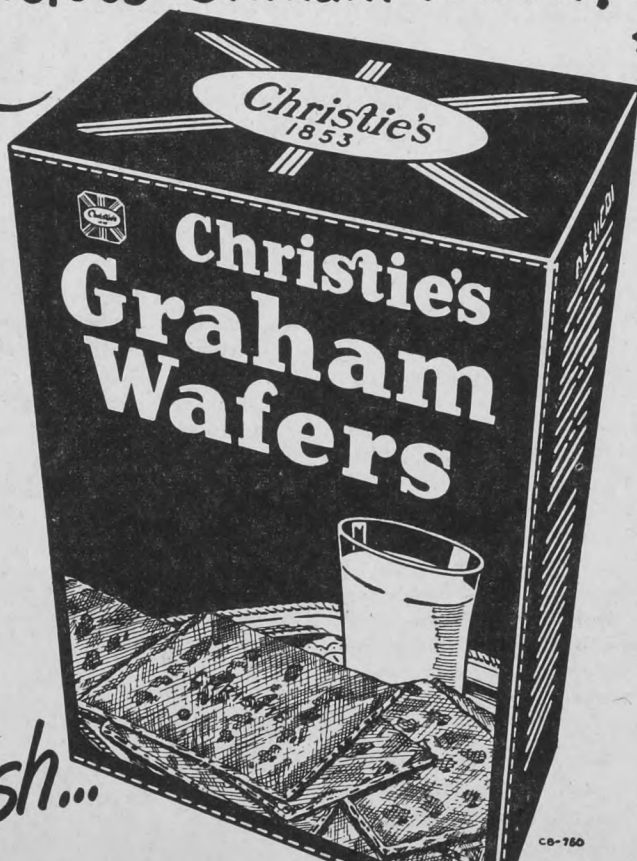
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Everyone just loves their delicious Graham flavour!



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There is a CHRISTIE BISCUIT for every taste

Your Favorite Pie

A tender, flaky crust and tempting filling make any pie a favorite

by LILLIAN VIGRASS



Fluffy Lemon Meringue Pie makes a festive dessert.

EVERYONE seems to have a favorite pie, whether it is a tangy lemon pie, a spicy pumpkin pie, a juicy fruit pie or the men's favorite, apple pie. At the mention of each of these we visualize a well-baked pie with a flaky, golden-brown crust and a tasty filling, piled high with toasted meringue, garnished with whipped cream or topped with a delicate-brown, latticed crust.

A good crust means a good pie. Pastry should be flaky and tender, taste of good fat and be golden-brown in color. Skill in pastry-making comes only with practice, so no one need expect perfection immediately. The beginner is wise to give most of her attention to the mixing, rolling and baking of the crust, and to keep the filling simple until the pastry is high in quality and uniform in appearance.

The most easily made pies are those with the fillings made separately, then poured into the baked shells. Once, however, one has mastered the art of pastry-making, fruit pies and two-crust pies will be almost as easy and will be equally delicious. If they are baked for the first few minutes in the lowest section of a hot oven, the bottom crust bakes immediately before it has a chance to become soggy. The pie can then be moved into the center of the oven, and the filling cooked slowly, if necessary.

A meringue adds to the appearance as well as the flavor of one-crust pies. It is not difficult to make and takes but a few minutes. The following method is suggested.

Beat the sugar into the egg whites—preferably during the latter half of the beating—with a rotary egg beater until the whites are stiff and shiny. The peaks formed should be fairly stiff and the tips slightly rounded. Two tablespoons of fine sugar per egg white give the best result.

Pastry

2 c. flour 6 T. cold water
1 tsp. salt (approx.)
½ c. fat

Put flour and salt in a bowl; mix fat into flour with two knives or a pastry blender. Stirring with a fork, add cold water gradually. Use only enough water so the particles will adhere when pressed between the fingers. Form into a ball with the hands. Roll lightly on a floured board to form a rectangle; fold in thirds and cover tightly and chill. It will keep several days in a cold place.

Caramel Cream Pie

Baked pastry shell, 9-inch	1 c. sugar
2 c. milk	2 eggs
4 T. cornstarch	2 T. butter
¼ tsp. salt	1 tsp. vanilla

Heat 1¼ c. milk in top of double boiler with ½ c. sugar. Place other ½ c. sugar and the butter in a light frying pan and heat over direct heat, stirring constantly until the sugar is caramelized to a deep-brown color. Remove from heat. Add ¼ c. boiling water, stirring carefully. Add caramelized mixture to the milk. Make a paste of starch, salt, egg yolks and ¼ c. cold milk. Stir into milk mixture; cook until smooth and thick. Cover; continue cooking ten minutes. Remove; add vanilla. Cool slightly and pour into baked shell. Cover with meringue made from whites of eggs and brown in the oven (400° F).

Lemon Pie

Baked pie shell, 8"	Grated rind of 1 lemon
1 c. boiling water	¼ c. lemon juice
5 T. flour	1 tsp. butter
½ tsp. salt	2 eggs
¾ c. sugar	

Mix the flour, salt and sugar in a little hot water; add to the boiling water; stir and cook until thick. Cook slowly for five minutes. Beat the egg yolks slightly; add the lemon juice and rind; stir into the mixture and cook for one minute more. Remove from the stove and stir in melted butter. Cool slightly. Pour into baked shell; cover with meringue made from the egg whites and brown in the oven (400° F).

Streusel Apple Pie

Pastry for 1 crust	1 to 2 T. water
4 sour apples	Cinnamon, nutmeg or lemon juice
2/3 c. sugar	
1 T. flour	

Wash, pare, core and quarter the apples; cut into thin slices. Mix sugar, apples, flour and spice. Add lemon juice to apples which are not sufficiently well flavored. Add water, if apples are not juicy. Sprinkle the top evenly with Streusel. Place pie low down in the oven (450° F), bake until the edges are brown; then move it to a shelf in the center of the oven, and decrease the temperature to 350° F and bake 40 to 50 minutes, or until the pastry is brown and the apples are cooked.

Streusel

½ c. flour	¼ c. brown sugar
½ tsp. cinnamon	¼ c. butter

Sift flour and cinnamon together. Cream butter; add sugar gradually; then the flour-cinnamon mixture. Sprinkle evenly on top of an open apple pie.

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W50-11

September Relishes

that will add zest and color to winter meals

THE pungent aroma of spices and vinegar fills the kitchen, announcing to all that it is pickling time again.

Pickles and relishes give spice to the plainest of meals. They are the accessories that help to dress up a dinner or give a special touch to a commonplace lunch. Not much can be said for them nutritionally perhaps, but a little goes a long way in adding color and zest to a drab, unappetizing-looking leftover or a last-minute dinner dish.

Most relishes and sauces are easy to make. Whereas pickles may become wrinkled or hollow, poor in color, soft, hard or tough, in making relishes these difficulties are minimized. As in pickles, however, relishes should never be overcooked and a good grade of vinegar is essential for a delicate flavor. Water containing too much mineral will often darken them slightly. If very hard water is boiled thoroughly, then cooled before using, there should be little or no color change. Relishes take but a short time to make, and one can often include in them many of the vegetables left in the garden at the end of the canning season.

Cucumber Relish

- | | |
|-------------------------------|------------------|
| 3 qts. chopped, ripe cucumber | 1 tsp. tumeric |
| 1½ c. chopped onion | ½ c. sugar |
| | ¼ c. dry mustard |
| | ¼ c. flour |
| 1 pint vinegar | |

Peel and remove seeds from cucumbers; cut in cubes. Chop onions; add to cucumber. Sprinkle with 3 T. salt and let stand half an hour. Drain. Mix flour, sugar, tumeric, mustard and vinegar to a smooth paste. Add vegetables and cook slowly until tender—about 20 minutes. Seal in hot, sterilized jars. Makes four pints.

Green Tomato Pickles

- | | |
|-----------------------|---------------------------|
| 1 gal. green tomatoes | 1 T. mustard seed |
| 1½ c. brown sugar | 1 T. whole allspice |
| 6 large onions | 1 T. celery seed |
| 2 sweet red peppers | 1 T. whole cloves |
| 4 c. vinegar | 1 tsp. whole black pepper |
| | 1 T. mustard |

Slice tomatoes and onions thinly. Sprinkle with ½ c. salt; let stand overnight in a crock or enamel pan. Drain well. Tie spices in a cheesecloth bag. Chop red peppers very thinly. Add sugar, mustard, seasonings and peppers to the vinegar; then add tomato and onion. Cook for half an hour, stirring occasionally to prevent scorching. Remove spice bag. Pack in hot, sterilized jars and seal immediately. Makes about four pints.

Rhubarb Relish

- | | |
|------------------|-------------------|
| 2 qts. rhubarb | 1 pint vinegar |
| 1 T. salt | 1 tsp. each of |
| 1 qt. onions | ginger, allspice, |
| 3 c. brown sugar | cinnamon |

Combine all ingredients and simmer gently until cooked. Add black pepper to taste. Seal in sterilized jars.

Chili Sauce

- | | |
|--|--------------------------------------|
| 14 lbs. ripe tomatoes (5 qts. chopped) | 3 T. salt |
| 1 lb. sweet green peppers (1 pint chopped) | ¾ lb. onions (½ c. chopped) |
| 1 lb. sweet red peppers (1 pint chopped) | 1 c. sugar |
| | 3 c. vinegar |
| | 1 tsp. each of |
| | ground cloves, allspice and cinnamon |

Peel tomatoes and onions. Discard the stems, seeds and coarse white portion of the peppers. Chop vegetables or run

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them through the medium cutter of the food chopper. Measure. Add salt and sugar; simmer until the mixture begins to thicken. Add vinegar and spices; continue cooking until the mixture is a thick sauce (about one hour). Stir occasionally to prevent scorching. Pour the sauce into wide-mouthed bottles to within one inch of the top. Dip new cork stoppers into boiling water; seal the bottles and dip the tops into melted paraffin.

This chili sauce may also be sealed in hot, sterilized jars. Makes about six pints.

Swiss Chard Relish

- | | |
|--------------------------|---------------------|
| 5 qts. Swiss chard stems | 1 T. mustard seed |
| 7 medium-sized onions | ½ c. cornstarch |
| 1 qt. vinegar | 1 tsp. tumeric |
| 4 c. white sugar | 1 tsp. curry powder |
| 1 T. celery seed | 2 tsp. dry mustard |

Cut the chard stems in small pieces, then measure. Sprinkle with salt and let stand two hours. Add chopped onions; let stand for half an hour longer. Drain well. Add vinegar, sugar, celery seed and mustard seed. Cool until tender.

Make a sauce of the cornstarch, tumeric, curry powder (if desired) and dry mustard with ½ c. water. Add to the chard. Boil 15 minutes; seal in well-sterilized jars.

Rummage Pickle

- | | |
|-----------------------------|-------------------------|
| 2 qts. green tomatoes | 2 bunches celery |
| 2 sweet green peppers | 1 small, hot red pepper |
| 1 qt. small green cucumbers | 2 sweet red peppers |
| 1 qt. ripe tomatoes | 1 T. mustard |
| 4 medium-sized onions | 4 T. salt |
| | 1 qt. vinegar |
| | 2 c. brown sugar |
| | 1 T. cinnamon |

Put the vegetables through the food chopper, sprinkle with ½ c. salt, and allow to stand overnight. Drain well the next morning and mix thoroughly with all the ingredients. Allow to stand for 4 to 5 hours. Pack into jars, process and seal.

Cabbage Relish

- | | |
|----------------------|-------------------|
| 1 qt. cabbage | 1 qt. vinegar |
| 1 pint onions | 1 c. sugar |
| 1 c. green pepper | 1 T. celery seed |
| 1 c. red pepper | 5 T. mustard seed |
| 1 qt. green tomatoes | ½ T. tumeric |

Seed peppers; chop all vegetables, then measure. Soak cabbage and tomatoes separately overnight in a brine of ¼ c. salt in 1 quart of water. Drain, mix and add other ingredients. Let stand two hours. Boil until clear. Seal in hot, sterilized jars.

Tomato Catsup

- | | |
|-----------------------|-----------------------|
| 10 lbs. ripe tomatoes | 3 sticks cinnamon |
| 3 onions | 1 tsp. ground mustard |
| 2 sweet red peppers | 1 tsp. celery seed |
| 1 tsp. whole allspice | 1 T. salt |
| 1 tsp. whole cloves | ¾ c. sugar |
| | 1 c. vinegar |
| | 2 tsp. paprika |

Peel tomatoes; cut in quarters. Peel the onions. Remove stems, seeds and coarse white section from the peppers. Chop onions and peppers. Heat vegetables slowly in a large saucepan until the tomato juice runs freely, and then boil with frequent stirrings for 30 minutes. Rub through a fine sieve. Return the pulp to saucepan. Boil rapidly for 30 minutes, or until slightly thick. Tie the allspice, cloves and cinnamon loosely in a piece of cheesecloth; add them to the thickened pulp with mustard, celery seed, salt, sugar and vinegar. Boil the mixture until there is no free liquid; stir frequently. Just before removing from the stove, stir in the paprika.

Pour into wide-mouthed bottles to within one inch of the top. Dip new corks into boiling water; seal the bottles and dip the tops into melted paraffin. Makes three to four pints.

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Meal Time Economy

RED ROSE

CANNED SALMON

For tasty, wholesome meals that are really easy on the budget, serve Red Rose Canned Salmon

TRY THIS DELICIOUS RECIPE FOR....

SALMON CUPS

1 lb. can Red Rose Keta Salmon
½ cup butter

¼ cup chopped sweet mix pickle
Salt and pepper

Fill little earthen dishes with the mixture and cover with bread crumbs and brown in a 375° Fahr. oven.

Red Rose SALMON

A Product of
BRITISH COLUMBIA PACKERS LIMITED

Enemies of Fabrics

Know the causes of destruction to materials used in the home

by MARGARET M. SPEECHLY

DAY by day, various things work destruction on the materials in your home. Dirt is one of these enemies. Most people regard dirt as a nuisance but it is more than that because it puts strain on the yarns and dims the colors.

Loose soil that settles on draperies is not much trouble if it is removed regularly by shaking or brushing. However, if it is allowed to remain for long periods, the moisture in the air or steam from the tea kettle binds it to the material and makes it harder to remove.

Grit blown in from the fields is even more destructive than dust since the particles are sharp and cutting and soon become embedded in the weave. Rather than a sign of fussiness, frequent washing of curtains is a definite economy, as it removes strain from the material and restores the colors.

In getting rid of dirt, remember that curtains are easily damaged by rough handling. Instead of shaking them vigorously flush out the loose dust in cool, clear water. It may require two or three soaks. Use a plunger to draw the suds through the meshes, rather than rely on machine washing. Make the suds from the mildest flakes and not from a strong soap that might weaken the yarns.

Despite precautions, you may find that good curtains go to pieces in the wash for no apparent reason. The enemy here is sunlight. Even curtains from north windows may be seriously weakened by destructive rays not visible to the eye.

Usually the lower part goes first, since the upper section is protected by the window panes which cut off some of the harmful rays. The blind helps too. The damage is greater if the curtains are allowed to flap against the wire netting, increasing the friction and the load of soil.

If the windows are open, protect your curtains from wear by pinning them back with clothes pegs. When possible make them so that they can be hung from either end, and usable on more than one window. This distributes the wear caused by friction, dirt, moisture and sunlight, all of which are deadly enemies of net, lace, marquisette and other thin materials.

Before you handle curtains, check your finger nails to make certain there are no sharp edges to snag the material. Remove rings with claws and high settings that might get caught in open weaves.

Such things do a lot of damage to silk, rayon or nylon garments, so be sure to deal with rough skin and hang-nails before you touch fine fabrics, wet or dry. A pumice stone which costs only a few cents works wonders in smoothing rough fingers, an emery board deals with broken nails. Slip on an old pair of clean fabric gloves before putting on nylon stockings.

MYSTERIOUS slits or holes in bath or hand towels may be due to contact with a razor blade. Men sometimes wipe a blade on the nearest thing without realizing that it only

takes one broken thread to form a hole.

Cuts on tea towels are often caused by careless drying of sharp knives. Bread saws leave jagged marks. Children need to learn that in drying blades, the edge should always point outwards to avoid cuts.

Chlorine bleaches are so commonly used these days that it is easy to forget they are powerful chemicals. Properly handled, they should not harm white cottons and linens, but under any circumstances they are ruinous to wool and silk.

When you bleach, follow the directions on the bottle with the greatest care. Measure both the chemical and the water; stir thoroughly before adding the clothes; use cold water rather than hot because the action is less severe at lower temperatures; do not leave the clothes in the solution for more than a few minutes.

Rinse and keep on rinsing in fresh water until there is no trace of odor. Remember that the margin of safety in bleaching is very small. Actually, there is very little difference between the correct amount and quantities that permanently weaken the material.

AROUND the farmstead there are many substances powerful enough to attack any clothing they touch. Strong acids and alkalis are used in the machine shop and barn, and medicines and disinfectants for humans or animals are capable of staining cloth even if they do not eat holes.

It is therefore essential to protect your clothing while measuring medicines, making soap, using flux for soldering, refilling the fire extinguisher, bleaching clothes or clearing drains with special products.

If you get even the tiniest speck of chemical on a garment, put it in cold water at once to reduce the strength of the substance. Several rinses are better still. Neglect is fatal since the chemical becomes more concentrated as it dries.

Even though stains do not necessarily mean holes, they are enemies because they spoil the appearance of a garment. Speed in dealing with spots is important due to the fact that some refuse to budge once they are dry. If you cannot remove them yourself send the garment to the cleaner with a note attached saying what caused the trouble.

Perspiration weakens many fabrics, specially wool, silk, or even cotton, so it is important to wash it out as soon as possible. Silk saturated with perspiration is liable to fall to pieces particularly if "weighted." Wool becomes matted and shrunken especially under the arms and on the soles of socks where friction adds to the damage. Dyes are also attacked by perspiration.

Use shields to protect garments that are not washable, under the arms and if necessary across the shoulders. Wash the shields frequently. If you use anti-perspirants, follow the directions on the jar, since some of these preparations can do as much damage to fabrics as perspiration.



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Lovely-looking skin is a "must" for pretty Elaine Parker, whose job calls for meeting people every day. She says, "Noxzema is my daily powder base and regular beauty aid. It's been a great help to my dry skin... and so pleasant to use!"

LOOK LOVELIER IN 10 DAYS OR YOUR MONEY BACK!

Skin Specialist develops new home beauty routine—helps 4 out of 5 women in clinical tests

● If you want an alluring complexion, if you've suffered from dry, rough skin, blemishes or similar skin problems, here's news.

A Skin Specialist has now developed a new home beauty routine. He found, in clinical tests; that a greaseless skin cream—renowned Noxzema—has a gentle, medicated formula that helps heal blemishes... helps supply a light film of oil-and-moisture to the skin's outer surface. It works with nature to quickly help your skin look softer, smoother, lovelier. Here's what you do.

4 Simple Steps

Morning—1. Apply Noxzema all over your face and with a damp cloth "cream-wash" your face—just as you would with soap and water. Note how clean your skin looks and feels! **2.** After drying face, smooth on a protective film of greaseless Noxzema as a powder base.

Evening—3. Before retiring, again "creamwash" your face. **4.** Now massage Noxzema into your face. Remember—it's greaseless. Pat a little extra over any blemishes to help heal them.

This new "Home Facial" actually helped 4 out of 5 women in clinical tests. The secret? *First*, Noxzema is a greaseless cream. And *secondly*, it's Noxzema's medicated formula—in a unique oil-and-moisture emulsion!

Try it yourself. So sure are we that results will delight you that we make this sincere money-back offer.

Money Back If Not Satisfied

Try this Specialist's new Home Beauty Routine for 10 days. If you're not delighted with results—return the jar to Noxzema, Toronto—your money cheerfully refunded. Today get Noxzema Skin Cream. At all drug and cosmetic counters—21¢, 49¢, 69¢ and \$1.39.



"Light, soothing Noxzema is just fine for my sensitive skin," says Avril Keiller of Montreal. "I use Noxzema every night, to help a very dry condition. And greaseless Noxzema is my regular powder base."

"It takes so little time to gain a softer, smoother, clearer-looking skin with the new Noxzema 'Home Facial,'" says Patricia Pottinger of Victoria. "It's proved such a help, too, in clearing up occasional blemishes."



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Skin
Cream

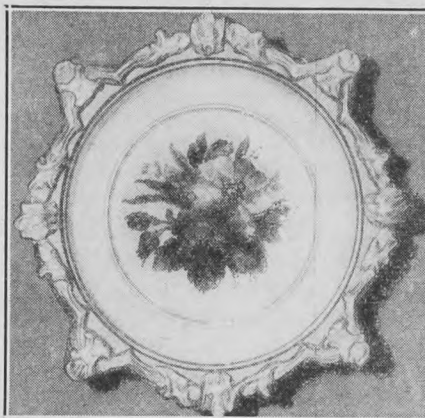
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Dainty Touches

Pretty and practical ideas for the needlewoman

by FLORENCE WEBB



Rose and Clematis Petite-point

Design No. 855.

Every needlework enthusiast will instantly appreciate and want to make this pretty piece of petite-point. Charming as it is when framed as a picture, it can also be used as a round medallion for the center of a silk-puff pillow, or it can be combined with gold French lace or silk to make a pretty afternoon or evening bag. When used as a medallion it is attractive outlined with gold lace or edging. Flowers measure 2½ to three inches. This piece was designed specially for Country Guide readers by Babs Fuhrmann, one of our better-known needlepoint experts. Design No. 855 includes the silk canvas (about 29 mesh to the inch), the chart to show you where colors are placed and all threads for reproducing the design in petite-point. Price \$1.75 complete.

Warm and Pretty Gloves

Looking ahead, it seems like an ideal time to start work on a new pair of gloves to keep your fingers warm when cooler weather comes. These are different and attractive. The long cuffs may be omitted and the work started with the ribbed cuff, if you wish. Knit on four needles. Pattern is No. K-65. Price 25 cents. (Requires three balls yarn.) Three or four-ply, non-shrink knitting yarn (any shade) forty-five cents per one-ounce ball. Knitting needles (any size) 20 cents per set of four.



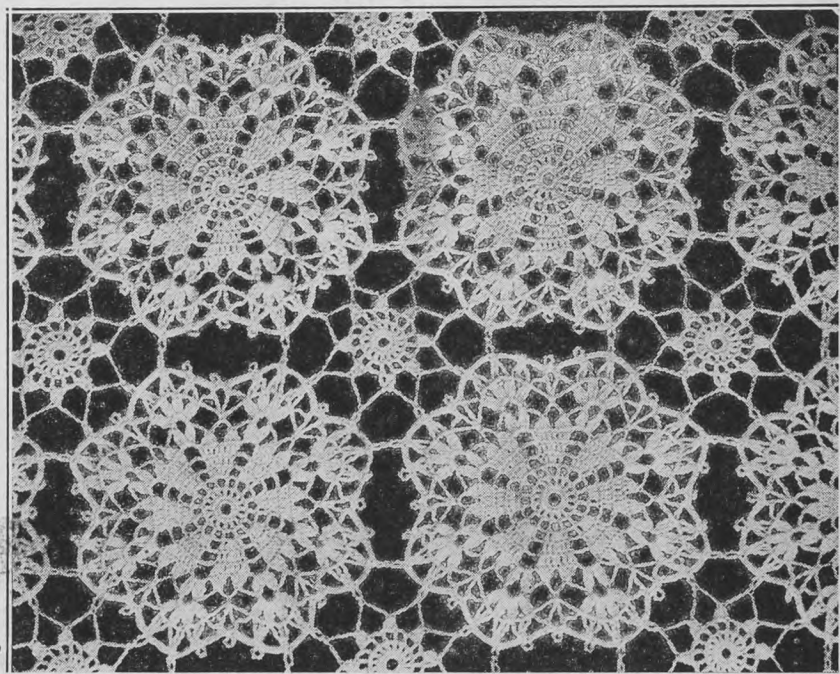
Design No. K-65.

The service of Florence Webb through The Country Guide will also answer queries concerning other needlework and handicraft supplies.

If you wish information regarding equipment and prices address letters to Florence Webb.

Address needlework orders to The Country Guide Needlework, Winnipeg, Manitoba.

Misty Morning Medallion



Design No. C-316.

We have given you a large illustration of this attractive medallion because we know you will be interested in seeing just how it looks when a few are joined together. It is one of our favorites for tablecloths, buffet and vanity sets, tray mats, etc. The Pattern is No. C-316. Price 25 cents. No. 20 ecru or white crochet cotton (375-yard balls), 39 cents. Steel crochet hook (any size), ten cents.

Beauty Quick Tricks

Some timely shortcuts to neatness and better looks

by LORETTA MILLER



Lovely Ann Blythe uses routine shortcuts to help an active career.

TAKE time out from your busy day to primp just a little! You'll feel better, certainly look better, and attack the next job with new enthusiasm. Your family will be proud of you, too, if you keep yourself looking your loveliest. There are quick tricks to help you solve almost every beauty problem.

Brittle Nails?

You can make a wonderful glycerated aid for checking brittle nails and at the same time bleach the fingertips. Do this: place two ounces of 17-volume peroxide into a bottle and to it add one ounce of distilled water and two drams of pure glycerine. After scrubbing your hands thoroughly, and drying them well, rub a bit of this nail-conditioning and bleaching aid around the nails, cuticle and fingertips. Let it remain on for a few minutes, then rinse the hands in clear water. This may be used as often as desired. A little of this aid applied at night and left on until morning will quickly help overcome dry cuticle.

Tender Foot?

Don't be a tender foot! You can overcome the burning on the soles of your feet at once. Pieces of heavy adhesive felt, which may be had at any drug store, should be cut and placed over hard calloused skin that burns when you walk. Cut the felt a bit smaller than an egg. Then after scrubbing and drying the offending spots press the adhesive felt into place. Your feet will feel as good as new and your expression will be happier.

Carrying yourself correctly will ward off fatigue. Swish just a little as you walk. This means that you are relaxed. The swish is caused by the correct action at the hips as one foot is placed ahead of the other. When walking carelessly muscles are taut and the carriage becomes stiff and ungraceful. Point your toes straight ahead, or out just a little, and swish a bit if you want to have a graceful carriage.

Looking Tired?

Wring out your washcloth in cold water and rub it over your face and throat every few hours. Brush your hair, too. Then put on a little lip and cheek rouge. You will not only look like a new person, but it will give

you a feeling of freshness. Turn the corners of your mouth upward, in a pleased or semi-smiling expression whenever you think of it. This will go far toward giving you a happier natural expression and will ward off frown lines.

Unwanted Hair?

Dark leg hairs spoil the feminine shapeliness of lovely legs. Keep the hairs bleached and they'll not be visible through even the sheerest stockings. To ten tablespoonfuls of 17-volume peroxide add five drops of ammonia. Stir together. Then cover an orangewood stick with cotton and keep daubing the bleaching agent over leg hairs until they are bleached. If you have tried other bleaching agents without satisfactory results, here is the reason: the hairs on the legs are too short and too sparse to hold the liquid bleach long enough for it to perform its task. But by continuing the application for a few minutes, the bleach does not have a chance to dry, but the hairs are kept saturated and therefore lightened. Such a bleaching method may be used as often as desired. Rinse off the bleach with clear water.

Straight Hair?

If a soft wave or loose end-curls make a difference in your appearance, by all means take time out to give yourself a home permanent wave. Directions are foolproof and anyone who is able to take care of her own hair can give herself a permanent. Be sure to follow directions to the letter. If you are going to cut your hair, do a little of the trimming before the permanent, then the final trimming and shaping after the wave has been given. Short hair is easier for the busy person to handle. It holds its shape from one shampoo and finger wave to the next and will require less daily care than longer hair.

Dry Skin?

If your skin feels dry and taut, cleanse your face and throat with your favorite cleansing method, then smooth on a heavy coating of lubricating cream. Let the cream remain on for an hour or two, then remove it and put on your regular make-up. This is an especially good plan to follow if you are alone.

Eyes Tired?

If eye fatigue gives you a tired expression, use an eye bath as often as you please during the day. Sewing, crocheting and other fine work may tire the eyes, but a good bath will freshen them. Use any of the recognized eye-bathing lotions, or make your own wonderful eye-bathing lotion and let your whole family use it. First boil one quart of water and place in a clean quart jar. To this add one moderately heaped teaspoonful each of borax, table salt and bicarbonate of soda. Stir until thoroughly dissolved. Then add one tablespoonful of pure, fresh glycerine. Filter through a filter paper or a triple layer of gauze. Place in as many smaller bottles as necessary and use with an eye cup. It will relieve strain caused by summer glare or by sun-glare on snow this winter.

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Your Medicine Chest

Convenience and safety in storing medical supplies

by RUBY PRICE WEEKS

ALMOST every home has some sort of a medicine cabinet in the bathroom, but how many are used exclusively for that purpose? And how many are kept in order so that anything may be reached immediately in case of emergency? Would yours bear close inspection at this very minute?

The majority of bathroom cabinets have to be put to other uses also, as they're the logical place for razor, toothpaste or powder, etc. The best plan is to arrange the medical supplies first and use any leftover space for less essential articles. Check on your chest and eliminate non-essentials such as cosmetics, hair curlers or bobbie pins which may be kept elsewhere. Next to its importance as a supply closet, it should be well equipped for good shaving for the men of the family, with a very good mirror on the door and an excellent light over, or beside it, so there will be no annoying shadows. Because medicine to take internally as well as any for wounds is kept in this closet, it should be spotlessly clean.

When giving a cabinet a regular cleaning, check supplies. Throw out empty containers or anything no longer being used. Don't keep medicine the doctor left for Billy with the idea you can use it for him another time. The next attack may be something entirely different though his symptoms may seem the same to you in all respects. There's no economy in saving medicine to use another time. It's less expensive and much safer calling in the family doctor than making a fatal mistake.

Replace any supplies which are practically gone. Among the essentials are: tincture of iodine, spirits of ammonia, a good burn ointment, gauze, bandages, adhesive tapes and cotton, bicarbonate of soda, aspirin, milk of magnesia and epsom salts. These will probably vary according to what is used in different households.

One thing must be uppermost in the mind of a housewife; all dangerous drugs must be placed out of reach of children (in a locked compartment if possible). Such drugs as camphor, sedatives and boric acid can all be very dangerous in the hands of youngsters. If there isn't room in this particular cabinet for them, store on a high kitchen shelf beyond children's reach. Not only do that, but any poisons should carry a noticeable warning for an absent-minded or very sleepy individual, in the form of a pin stuck through the cork, a tiny bell around the neck of a bottle, or a piece of adhesive placed so that no one can open it without removing the adhesive. By that time, the person should realize what he is doing!

Most supplies now come in screw-top airtight containers. This is an excellent idea since there is so much steam in a bathroom which would otherwise affect chemicals. After using these, the tops should be securely screwed on again.

With everything in a cabinet in order, plainly labelled, and where conveniently reached, great inconvenience—and even possible tragedy—may be avoided.



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Forecast for Fall

No. 727—A pert two-piecer with a fitted jacket, a nipped-in waistline and a swirly peplum to flare out over a slim skirt. Sizes 11, 13, 15, 17 and 19 years; 33, 35 and 37-inch bust. Size 13 requires 2½ yards 35-inch fabric; 2½ yards 35-inch contrasting. Price 35 cents.

No. 735—A dress that is just right for an afternoon tea or a club meeting when made in a solid color with brilliant buttons. Or try it in a soft stripe for afternoons at home. Sizes 11, 13, 15, 17 and 19 years; 33, 35 and 37-inch bust. Size 13 requires 5½ yards 39-inch fabric for the longer-sleeved version. Price 35 cents.

No. 733—There's flattery as well as service in the slim lines, open-throated neckline and buttoned-up pockets of this casual dress. Choice of three sleeve styles. Sizes 12, 14, 16, 18 and 20 years; 32, 34, 36, 38, 40, 42, 44, 46, 48 and 50-inch bust. Size 18 requires 5 yards 35-inch fabric. Price 35 cents.

No. 720—Two blouses, each fashioned with fine dress-making detail. Make them now to wear for fall and winter with a suit or separate skirts and cardigans. Sizes 10, 12, 14, 16, 18 and 20 years; 34, 36, 38 and 40-inch bust. Size 16 requires 1½ yards 35-inch fabric; ¾-yard 35-inch contrast for blouse with collar. Price 25 cents.

No. 517—Twin skirts are included in this pattern, one trimly tailored with slanting pockets, the other softly styled with a back flare and dressmaker sash. Sizes 22-inch waist, 31-inch hip; 24-inch waist, 33-inch hip; 26-inch waist, 35-inch hip; 28-inch waist, 37-inch hip; 30-inch waist, 39-inch hip, and 32-inch waist, 41-inch hip. Size 28-inch waist (16) requires 1½ yards 54-inch fabric for tailored model; ¾ yards 39-inch for skirt and sash. Price 25 cents.

No. 475.—Peg-top pockets highlight this one-piece dress. Has brief sleeves and a choice of necklines. Make it with a cross-striped bodice and plain skirt for late summer or in wool jersey for later on. Sizes 12, 14, 16, 18 and 20 years; 32, 34, 36, 38 and 40-inch bust. Size 16 (34) requires 2½ yards 35-inch fabric for the skirt; 1½ yards 35-inch fabric for the blouse. Price 25 cents.

Be sure to state correct size and number of pattern wanted.
Write name and address clearly.
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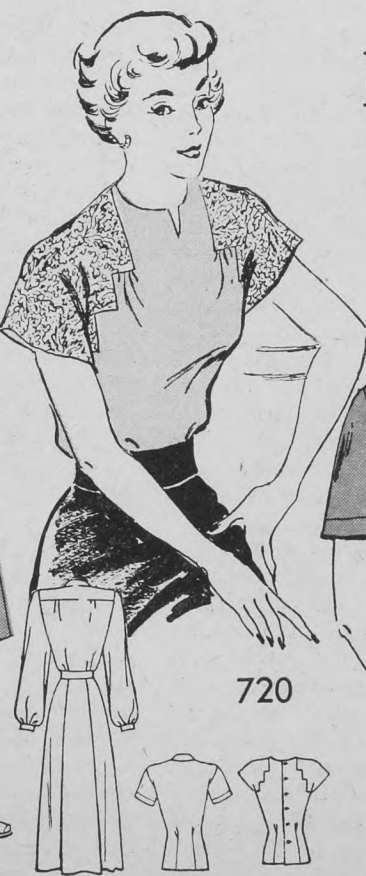
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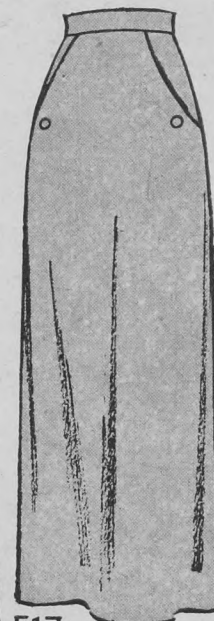
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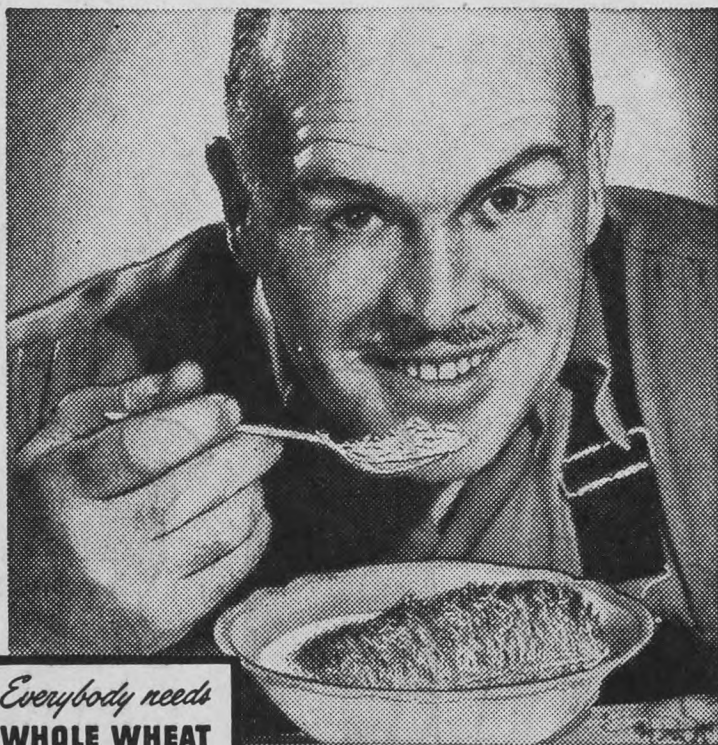
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SW-140

Lady, Are You a Citizen?

In Canada now, a woman too, has full citizenship rights

by A. C. ELLISON, K.C.

"CERTAINLY I am a citizen," you tell the immigration officer, but can you prove it?

Although the holiday season is practically over you may be planning a trip abroad, or even south of the Line, and may be faced at any time with the necessity of proving your citizenship. Of course, if you are the proud possessor of one of those new certificates, you don't have to worry. That is, if you have it with you and have not left it in that safe place at home.

"But," you may ask, "why should I have a citizenship certificate? I haven't been naturalized, I was born here."

Jane Doe was born here, too. She had lived in Canada all her life and her husband was a citizen. Naturally she was very indignant when an alert scrutineer challenged her right to vote. However, his objection was upheld, because Mrs. Doe was a citizen of Norway.

The facts were that at the time of her marriage in 1945, her husband was a Norwegian and she took his citizenship, and although he became a Canadian by naturalization in 1948, Mrs. Doe remained a citizen of Norway.

While there are a number of cases of this type at the present time, they will gradually disappear as the Canadian Citizenship Act provides that marriages after January 1, 1947, do not affect nationality. In other words, so far as Canada is concerned, a woman now has full citizenship rights independent of her husband.

This law marks the culmination of a long struggle to secure equality of national status for women. In 1870 there was a hot debate in the Imperial Parliament on this matter. Opposition members pointed to a case where an English woman, judicially separated from her husband, had been made an alien against her will through her husband changing his nationality. The government, however, took the view that it was absurd sentimentality to change International Law to meet one case of hardship.

Canada's Naturalization Act 1881 followed British law, but women throughout the world continued to agitate for equal rights. The first break came in 1922 when the United States granted women full citizenship rights. Within the next few years, France, Russia and most South American countries followed suit.

The situation now arose that when a Canadian woman married a citizen of any of these countries, she lost her Canadian citizenship without acquiring that of her husband and became a woman without a country.

In 1932 the Canadian Parliament remedied this injustice by providing that, in such cases, a woman should retain her Canadian citizenship. But not until 1947 did Canadian women attain full equality with men.

However, the Citizenship Act which became effective in that year did not apply to marriages already contracted and many problems still arise. For example, the citizenship of a woman who married a Hungarian, depends on whether she was of Jewish race. If she was, she remained a Canadian

because Hungary did not grant her citizenship.

The nationality of a woman who married an Armenian, depended on whether he was from the Russian zone, in which case she retained her citizenship, or from the Turkish zone, when she would be a subject of Turkey.

Women are becoming increasingly citizen-minded. When the Act first became effective, a bare ten per cent of the applicants were women. Today they account for over 40 per cent of the applications received.

In December last, out of 1,090 new citizens, 467 were women. Out of 29 British subjects who received certificates, 19 were women. Seven minors, four of them girls, also obtained citizenship in their own right.

As might be expected, most of the candidates described themselves as "housewives," but there were 42 other occupations listed, including two ladies listed as farmers. But the most attractive occupation was that of the applicant who described herself as a "property owner."

Twenty-seven different nationalities were represented among the new women citizens, Poland leading the field with 83. Czechoslovakia and Germany were second and third with over 40 each. Two of the new citizens had described themselves as "stateless" and had no country they could claim as their own.

In contrast with "statelessness" we have many cases of dual citizenship. For example, the child of United States parents if she was born in Canada, would be a citizen of the United States by law of that country; but she would also be a natural-born Canadian citizen, and vice versa.

WHEN the Canadian Citizenship Act swept away the last vestiges of the theory that a man's wife was his chattel, the ladies, as usual, got a bonus in addition to their rights. For in one respect they have an advantage over the male sex. A man who marries a Canadian citizen has to reside in Canada for five years before he is eligible for citizenship, but a woman only requires one year's residence.

"And why not?" says my wife. "Everyone knows that women learn five times as fast as men."

If you have any doubt about your citizenship, or if you contemplate a trip abroad, why not get your certificate? Every Canadian citizen is entitled to obtain a Certificate of Citizenship on furnishing the Department of Citizenship, Ottawa, with the necessary information for a nominal fee of \$1.00.

THE happy child is the child who feels he is wanted, is understood and is liked by other children. Parents have the primary responsibility in giving the child the affection and the guidance that he needs. They, more than anyone else, can ensure the child growing up in the knowledge that he is loved and wanted. Discipline, of course, is necessary and when properly enforced will assure the youngster that his parents are interested in his welfare.

Swiftwater

Continued from page 15

ridicule of Cam Calloway and his brood. There were times when these two—Bridie in blue jeans like any boy—had had wonderful days together in the woods, hunting, fishing, even trapping. Bridie was almost as good as Bucky himself on the trail and at such times he could forget she was nothing but a girl. But there were other times, particularly of late—Bridie in dresses just hanging around and evincing a tiresome interest in Bucky's affairs—that made him wish he'd never known her. Getting sort of pretty, she was, too; pretty and silly.

Bridie was in jeans today, but working in the dresses phase.

"Bet I know where you've been," she said. "Out trying to find where the wild geese are nesting."

"Supposin' I have," Bucky said sullenly.

"What makes you care so, Bucky?" He didn't answer.

"I mean, what makes you take 'em on like they're your special business?"

"The wild goose is my totem," Bucky said with heat. "I'm goin' to have one tattooed on my chest when I get enough money."

"Yes indeedy, and I expect you'll be goin' off with 'em sometime when they go, same as Cam does."

"Who told you that?"

"They all think you won't be long here."

"When the time comes I'll go an' not before. Let 'em laugh at me. I

don't care. I got no use for them either. I'll—"

"They don't laugh at you when we're around," Bridie said.

"I could tell 'em all a lot about the geese, though, an' why they're staying on this fall an' why they don't always—"

"Tell me, Bucky."

"Might as well tell the whole town as tell you an' I ain't goin' to, not yet. You couldn't keep anything overnight."

"I could so!"

He was silent again for a space, then: "I've been thinking a lot. I'm going to do something in this world—I'm goin' to be somebody some day." He gestured around with a wide, vague sweep of his arm. "I'll do it. You wait an' see. I'll make the town laugh out of the other side of its face—"

"I know you will, Bucky."

The way she said it made him look at her squarely for a moment. He grew self-conscious then, as if ashamed of his outbreak.

"Pa wants to know is everything all right at your place, with Cam away and all," she said, after a bit.

Bucky nodded. "Shuh, we're makin' out."

THEY came in sight of the Calloway cabin, weathered grey among the pine trees overlooking the lake. Its clearing was like a scar among the trees. Not much in the way of a farm site; not much good for timber, either; "pretty much nothing," as the townsfolk always said. Cam Calloway, more

nimrod than yeoman, always clung to the trees. He had "taken up" this hundred-acre tract from old Doane Shattuck, the landman, two years before on small quarterly payments, but beyond building a split-log cabin, little had been done by way of improvement. But ostensibly he was a backwoods farmer. With Bucky's help he had cleared a meagre two acres, had fought the stumps and stones, and each summer raised a patch of



"Oh Boy! At last he got his hearing aid!"

corn, potatoes, and some other garden truck. But all this was summer make-shift for Cam. Rangy and hound-lean, with a black Indian mane of hair, Cam was a true son of the wilderness; he was known to have a contempt for the orthodox ways of farmers. Life for him didn't really begin, till fall set in and he could take up the activities of the trap line and hunting trail.

He knew the trackless region around the Swiftwater and the Kennebec like the palm of his hand. Winters he made a fair living along his trap lines. During the fall he picked up considerable money acting as a guide to hunters out after birds or deer, or sometimes even moose, 50 miles to the north. But never wild geese. Cam never shot at geese, nor would he allow anyone with him to shoot them. Once he lost a \$50.00 guiding fee by fiercely knocking aside the gun barrel of a wealthy sportsman who was just aiming at a passing flock.

Bridie's prying eyes took in everything as they approached the Calloway clearing. Half a dozen chickens scratched in the dooryard. Old Scissorbill, the tame crow, was moving about in his wooden cage out back. Except for a single patch of corn that still stood, weeds had fired up all over the cleared ground.

"Looks like you've not turned over any ground for spring planting," Bridie said. "If you was aimin' to, Pa'd be proud to help."

"No call. We're like to be movin' anyway," Bucky gave out. "Lemme out here."

He climbed the fence and struck across the muddy field, glad to be rid of her. The gangling body was racing and winning, stoop-shouldered, against his overtaxed vitality.

Fifteen and a half, stoic and uncompromising, Bucky was more serious about life than any man. So much that was magnificent and maudlin, glorious and sentimental, to be lived up to

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at 15. The fires of idealism and glamour flamed in him fiercely.

Somehow Bucky knew Cam was home before he reached the clearing. As always a sort of bubble got going somewhere under his breastbone at the thought there was something that only Cam could give him, and he had been missing it for three whole weeks. He plunged forward headlong, then slowed to a walk again. He was eager, tearful, melting with affection, yet he was afraid. Always with Bucky there was the fear that Cam might go on and on like the geese and not return, and now his very breath hung at pause.

CAM stood by the daubed-clay fireplace, his head bent, his spare figure slumped and dejected. Hollows were under his eyes and in the dark planes of his face that were usually fulsome from the fires within.

He and Ma had been having it hot and heavy. Ma was sure puckered. Bucky knew by the attitude of Viney, his nine-year-old sister, and the intent quiet of old Sounder, the hound, who lay by the fire, in his brown eyes the look he had when he heard sounds he did not understand.

Bucky was glad he had not been there. Cam was whittled down to his smallest point again. That hurt. Cam looked ill and ravaged, but nothing was said about where he had been. Nothing would be, Bucky knew.

He just stood, embarrassed and delighted, filling his eyes with his father. Cam's, quick dark glance caught and met the glow in Bucky's face. For the next hour the boy simply stood close or sat close. Cam scarcely spoke for a time, waiting for his wife's anger to spend its fuel. Lide Calloway was 40, made of the same general stuff as Cam, but more combustible. Part catamount, he always said of her, with a touch of pride. She had put up with much; their life had been a series of flights into new territory, always into the unsurveyed, away from the security that women want. But she was married irrevocably to the greater, deeper side of Cam. Little demonstration between them, but the depth of that tie was always to be felt. Part of Ma's rancor was always fear for Cam, the same fear that Bucky knew.

Presently there was a scratching sound at the kitchen wall. Cam opened a trap door and old Scissorbill came in from his wooden cage. He hopped onto Cam's shoulder and rasped "Haw" in a coarse, jeering way.

There was a wicked gleam in the bird's canny eye and a world of wile in the sly cant of its head. Old Sounder got up uneasily at the sight of him. He and all the barnyard creatures lived in fear of the crow's black scissor beak. But beneath the swashbuckling persona that marked Scissorbill's ways lay a strange depth of affection for humans.

Cam talked a bit as he fed the crow bits of food. Scissorbill sat hunched up in his rusty black raiment, looking like some corrupt old Prime Minister, or an undertaker of the old school. His watchful, hooded eyes seemed to have black night in their depths. Even Ma Calloway was chary of the creature.

"Heard somewheres that crows live to be old as humans," Cam said. "Wonder how old this 'un really is?"

"Old enough to resign an' live on others anyway," Ma Calloway

grumbled. "I'd hoped he'd fly off with some of his thievin' kind this fall, but not him. He's found him a good thing an' he's fixin' to stick by it."

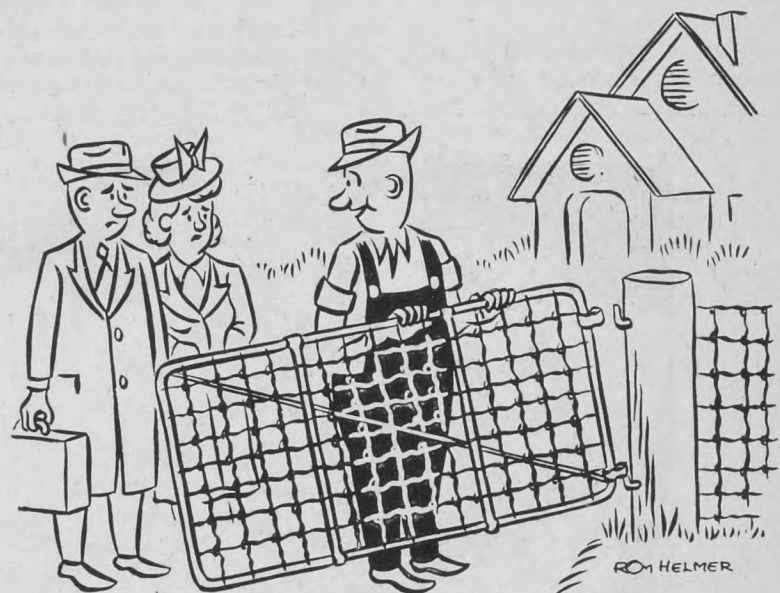
A shadow passed the window and there was a thump at the door and a pitiful bawl. Keg, the tame bear cub Cam and Bucky had brought home that spring, after Cam had shot its mother, was begging to come in by the fire. But Ma Calloway opened the door and belabored its fat stern with a broom.

"Aw, Ma." Bucky's voice dripped misery. "Now he's cryin'!"

"Keg's a crybaby. Keg's a crybaby," echoed Viney gleefully.

The cub's eyes did seem actually wet with tears and he wriggled, whimpered, and hung his head with all the pitiful exaggeration of a spoiled child. Bucky got some scraps from a box where he kept food for the animals and he and Viney went outside to comfort Keg. They left him in his shed mumbling over a heel of bread.

"Critters, critters," Ma was complaining. "Fair clawin' holes in the door to get inside. Eatin' us back into the woods, they are. If they was only barnyard critters. But no. It's varmints of the woods we must fetch home an' care for now, an' us with hardly enough to pay our tax. It ain't right nor Christian. Even the Good Book says that birds may light on your head, but you needn't let 'em nest in your hair."



"Oh heaven's no, you won't be crowding us! Do you think you could give a hand in with these bed springs, Herb?"

"They been a world o' fun for the young 'uns," Cam defended. "An' somethin' by way o' learnin', too."

Supper was a poor affair. There was only a strip of side pork and a pan of cornmeal Ma had cooked.

Bucky was slipping into his place at table when Ma's voice cut at him from the stove: "You, Bucky, an' Viney too, go wash your dirty hands. An' don't be afeard to splash your faces a mite, too; it'll not hurt you."

Something crackled in Bucky's shirt as he bent to wash.

"Gosh, I near forgot. Picked up a lot of trashy mail in town. Mostly for Ma, I guess. Ol' Briscoe was about to burn it, he said."

"Burn it!" Ma fired up. "You tell Jim Briscoe to let be with my mail! Here, hand it over, you scaper."

BUCKY gave her five open-ended envelopes, advertising circulars and such. He and Cam exchanged a long slow wink over Ma's shoulder.

Nearly a year before, Cam had seen a personal ad in an old magazine which read: "Would you like to receive mail every day in the month? If so, send name and address and ten cents in coin." The ad had not lied. Cam's dime had been hard at work ever since in Ma Calloway's name. Never a week passed but brought her a batch of catalogues, or a sheaf of surefire bargains in everything from hairpins to caterpillar tractors. As Cam himself scarcely received a letter once a year, Ma's ego got a subtle workout. Rain, snow, or shine, Bucky and Viney were forever being sent in to the post office. It kept Ma in reading matter and helped dispel the sapping loneliness.

"You fellers draw up an' set to," she said, "while I just glance over this mail." Her tone was sharp and preoccupied. "Sowbelly an' mush is our portion here, with the woods full of pa'tridge an' deer meat for the taking. I eat any more of it an' I'll be rootin' and squealin' with the critters out back. Bucky did get us a couple pa'tridge a week ago though," she added. "'Fore he got to studyin' so on the geese an' their secret doin's."

Bucky's eyes met Cam's.

"Well, your meat worries are over now, Liddy," Cam said, falling to with a great show of gusto. "I an' Bucky are goin' out right tomorrow, to lay us in a mess of wild birds an' some venison, 'fore I get caught up

with a guidin' trip. We'll take the heavy rifle along with the old ten-gauge this time. High time Bucky was learnin' to use the .30-.30 as handy as he does the shotgun."

Bucky quivered with repressed excitement. Ma sniffed:

"Yes, so's he'll be out in the woods all the time, 'stead of only part, I s'pose. Happen you'd learn him to be handy with the hoe as he is with the shotgun, we might ketch up with taxes an' maybe buy us a stick or two of new furniture. My sakes." She wet a thumb and turned another page of her circular. "Beats all what a sight of fine furniture a body can get for only \$89.50. Enough to fill a two-three-room house, it says here, an' six drape-length curtains throwed in."

Cam snorted.

"Spindly stuff that'd break up like scantlin's would a healthy man lean on it. Always hanker for whatever's few an' fur an' hard to git," he said. "Back in the city now, there's tom-

fools readin' fancy catalogues about solid hand-made tables an' chairs burnt an' polished such as these here. Ain't a city hunter comes out here but tries to bribe 'em off o' me. An' these deer-foot door handles an' the panther skins on the floor—they'd fair pawn off wife or child for a set o' them for their huntin' lodges an' the like. But out here we got to hanker for them matchwood things the city's sick of." Cam had made all his own furniture, fine pieces of hand-tooled pine and cedar, during those mid-winter days when blizzards snowed the family in for a week at a time. He was handy with tools, had even done a little carving on the side. The cabin floors were covered with the soft skins of deer, bear, and panther—carefully scraped, beaten, and softened by Cam.

"All the same, I'd admire someday to set me down in a house with real curtains, snap-on lights, and reg'lar rugs to the foot," Ma said. "Maybe when I go in to get my sinuses trephined I'll get a taste of such." For five years Ma had suffered violent periodic pains in the head which only a city specialist could ever cure, Doc Waters said.

"Speakin' of guidin' trips, who-all you expect to come out this year?"

"Mr. Corey, of course," Cam said. "An old Cash Wyble, cuss him, an' too many more of his stripe."

"Let's hope Doane Shattuck an' his brother come out for a long trip this fall," Ma said dourly. "A fine moose head an' a pretty week up in the woods might help our case a mite. Somethin's got to be done there right quick."

CAM'S face darkened. The ever-present problem of overdue payments on his 100 timbered acres had been as inescapable as his own shadow for a year past. But Cam had his pride.

"Shattuck's got him a watch-chain belly now," he said scornfully. "Seen him not so long back in his shiny car. Don't do no walkin' now. Why his tongue'd be hangin' out of his mouth a foot should he follow a trail a couple hours." Cam, though well past 40, was still lean-flanked as his hound, and could follow the dog all day and part of the night. "Don't know as I'd guide the old shoat should he show up," Cam added. "There's some things you got to draw a halt on in respect to the varmints themselves, I'll declare. But I mistrust we'll not be needin' ary of Doane Shattuck's favors soon. I been doin' some cold-out studyin' on plans for this comin' winter."

Cam paused an artful minute to tamp tobacco in his pipe bowl. Bucky passed him a blazing pine splinter.

"Bucky here has got some size to

him now," Cam went on. "Knows the woods an' the ways o' the varmints well as I. So I figger we should lay us in some extra traps an' let Bucky tend a line of his own."

A thrill ran along Bucky's spine. He gasped: "Tell me quick, Pa, you ain't spinnin' a lie-tale?"



"Nary tale," Cam said.

Viney was all eyes. Ma had laid aside her mail.

"Bucky ain't a tad no longer an' that's a fact," she said. "Speakin' o' size that is, an' appetite! But let it be hoein' or chores round the place an' he's puny an' pulin' again, or hard to

catch as a new bird dog. But I'm daresome of seein' him spend his whole time in the woods, goin' wild an' hairy an' low-down, like some we know in these parts. We'd had plans for educatin' the boy."

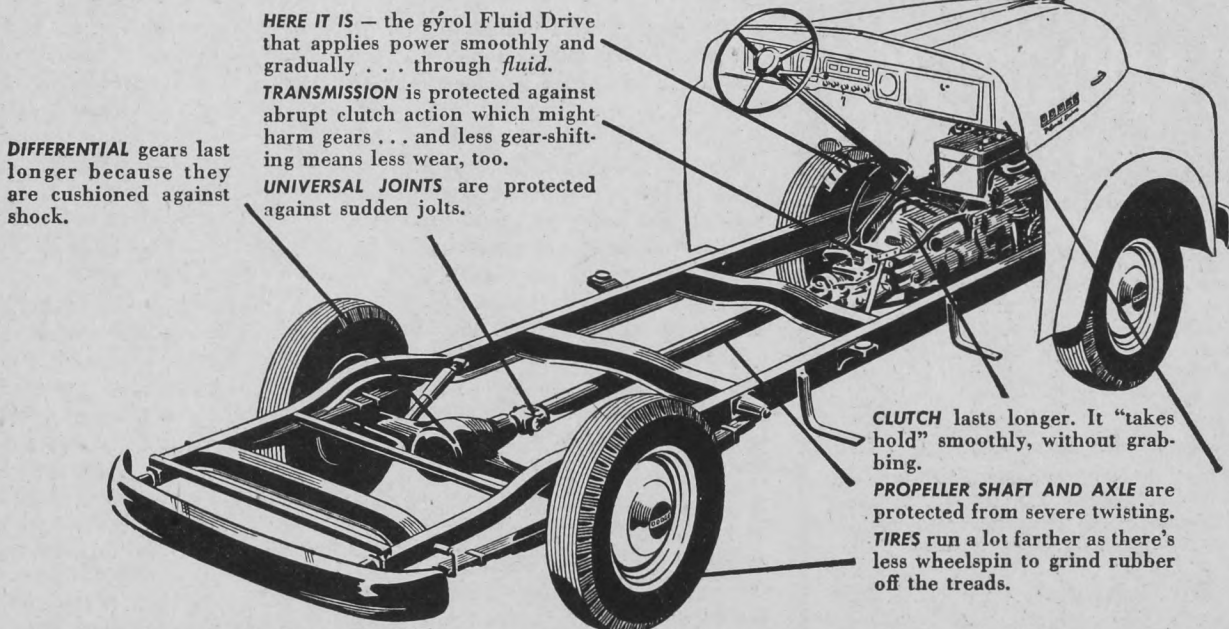
"An' still have," Cam said. "But last year he learnt all's to be learnt at Swiftwater Grade School. To send him to town school's goin' to take money an' there's no quicker way o' makin' it than furs. They'll might'nigh swap for gold this year. No, Bucky'll do best with what I can make out to learn him, for a spell."

Ma was silenced. Cam went on, authority in his tone now, for he spoke of his own realm.

"Cold winter, goin' to be," Cam pronounced. "I take note, comin' up through Tamarack, the buck rabbits already whiter'n Sol Wire's mule. Fur'll soon be prime. Now I figger on lettin' Bucky run the old line 'round the lake shore this winter, whiles I lay me out a new line up north along the Little Jackpine. I'll swear, it looks mighty promisin' there. I been a heap hindsighted or I'd of branched out up thataway afore this."

"Now them traps—I already ordered 'em from Stemline's store. Aye cod, with two of us workin' separate lines thataway, I figger we can just about take double catch for the season. By spring we'd stand to be rich as doe's cream."

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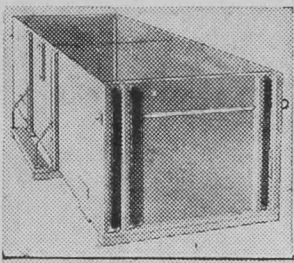
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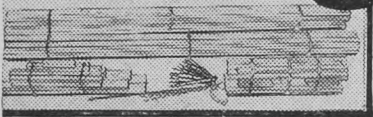


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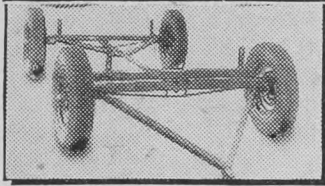
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THEY would lay out both trap lines together, he said, so that each would know the location of every trap. Now and then they could change off and cover each other's territory. There'd be nothing to it all, up until the snow got deep, Cam said. Then they'd have to use snowshoes. It would take two days then to cover their lines and round back home again and that would mean each man would have to spend the night in a snow camp at the end of his line.

"Each man." Bucky felt the hair stir on his nape, the way Pa said that. He grew more stolid. He had to hold so hard against the rising flood of feeling.

"Think you'll be ascairt to sleep alone in the deep woods, son?" Cam asked. "It's right fearsome at first."

"Not me." Bucky's tone discounted all concern. "Anyhow I'd have an axe an' a rifle an' plenty grub and blankets," he said.

Cam chuckled. "We'd be sleepin' out about once every week in bad weather. We'll have to build us reg'lar log caches for the extra traps an' grub an' such—big enough to sleep a man. A dog too, on occasion," he added slyly. "But before ary thing is done by way of trappin' we got us a sight of huntin' to do. Got to lay us in plenty wild birds an' rabbits an' a sight of jerked deer meat against winter weather. Rain's over for the year. It's comin' a spell of clear cold or I miss my guess. Geese'll be leavin' the lake tonight."

"Now no, Pa!" Bucky cried. "Only today I found it—what we been lookin' for long gone. Back in the marshes it is. I was fixin' to show you in the morning."

"Too bad, son. But migration's a thing'll not wait on the likes of us. It's timed an' certain-sure as the risin' an' settin' of the sun ball. But you can show me the place all the same. They eaten ary o' the corn we left 'em?"

Bucky shook his head.

"When'll we get started, tomorrow, Pa?"

"By grey streaks we should be on our way," Cam said. "Fetch out the two guns, Bucky. We'd best look to 'em now."

"Let be on all your hustle," Ma Calloway clipped. "Neither of you chaps is escapin' to the woods 'fore you get me in plenty wood an' water an' help cut up for the sausage."

"We'll leave all shipshape 'fore we go," Cam promised. He squinted down a gun barrel and muttered. "There's just not the light here for sightin' rust," he said. "Happen you could fetch out the Radiant Beam for a bit, Liddy, so we could see what's to-ward?"

MA rose with a fine mixture of reluctance and eagerness. Cam followed her with a beam in his eye as she went to get her new lamp from its box in the kitchen. It was a blue-glass affair with a special circular wick and its white china shade was strung with dangling crystals. This was Ma's prime treasure and she brought it out only for special company and holidays, lest dogs or children break it.

Murmurs accompanied Cam's gratified sigh as he held each gun barrel to the new bright light. "Bright's a bugle," he pronounced. "Even the old twenty-two. See you been over 'em recent, Bucky."

"I looked at 'em a week back." Bucky was noncommittal.

"We'm mobilized proper," Cam chuckled.

In the silence that followed a faint, far ya-honk jerked Bucky to his feet. It came from high sky. He flung open the cabin door. From far up in the misty blackness, directly overhead, other fainter sounds dropped earthward, wild, subdued ecstasy of passage. The easy honk of the old leading gander rippled in repetition along his formation lines like the clink of each link in a shaken chain.

"They're circlin'," Cam's voice came quietly. "They'll like to quarter once, then steady away an' head



south. For Florida an' Mexico, where all the wealthy are headin' now. We'll not see 'em again till April. Aye gonies, what a life." He sighed.

They listened till the deep pipe of the gander boomed again, farther away, then the wild high cadence diminished till the sounds came faint as the chink of falling coins and were gone.

Cam sat gazing pensively into the fire. In Bucky's chest was a feel like funeralizing. He still felt the goose-flesh on his skin, the way his father had named the night of passage. Cam was always right on these matters of the woods. Bucky knew how he got game; how he would sit in a forest clearing still as stone until the wild things drifted up and carried on their life within a dozen yards of the small, neutral figure.

"You sure can figger just what the critters'll do, Pa," he said. "How come you always know so well?"

"I've had a mort o' years to learn it in, son. Been in the woods since I was tad-high to a toadstool. All a man's got that critters ain't is the sense to outfigger 'em. He's a pretty sorry somethin' 'after forty years if he can't outsmart 'em an' guess 'em down." Cam stretched his arms high above his head and groaned: "Aye cod, I'm wore out. I could do with bed."

CAM was right about the weather, too. The cloudless sky next morning was like hard green enamel. There was no breeze and the stillness of a prayer lived beneath the high conifers around the Calloway clearing. From down by the lake came the faintest elfin tinkle of shell ice formed during the night chill. The ventriloquial call of a pair of loons out on the darkening waters struck a note as melancholy as the remote line of pine spires against the eastern sky.

"The crazy folk are right chipper this mornin'," Cam said, referring to the loons. "Geese gone. Always sets

'em up a mite, havin' the lake to themselves."

Cam was chopping the fixings for Ma's sausage, while Bucky piled seasoned pine wood by the cabin door.

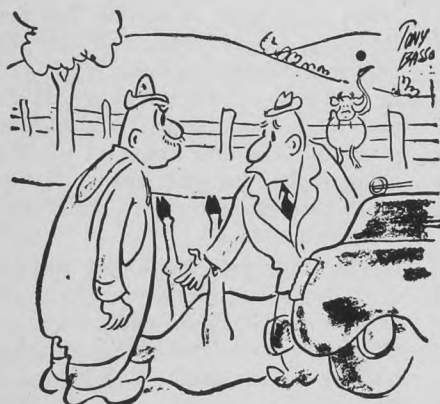
"What makes 'em call so skeery an' addled?" he asked.

"All that's laid out in a tale the Micmacs tell," Cam said.

"Tell it, Pa," Viney begged.

"Well, in times long gone there was a beauteous Indian girl in the tribe named Leaf Down, she was that dainty an' delicate. She was in love with a young brave, name of Eagle Seizer, an' they'm soon to become man an' wife when a medicine man from a neighborin' tribe is fair took over by Leaf Down's beauty. He's old enough to've fathered the pair of 'em an' should a-knowed better, but he goes a grain crazy at sight of the girl. He's a powerful high shaman, right handy at black art an' such, an' he casts a spell over the lovers. It does him nary good though; their love is too strong. But finally he gets Leaf Down's pa in his power an' makes him give over the girl in marriage.

"Eagle Seizer comes back from his huntin' an' the minute he hears of this he lights a rag out for the shaman's village, with his war ax an' his bow an' arrows, but the shaman's men are watching for him. They waylay him an' kill him an' throw his body into the lake. Leaf Down carries on scandalous when she hears of this an' the first chance she gets she goes down to the lake an' throws herself in from a high rock. Now up to that time the loon was a stone-dumb critter, the Micmacs say, but the spirits of them two lovers entered the birds, an' from that day on you could hear 'em grievin' crazylike over the wrong that was done 'em. From that day on no Micmac has ever killed a loon an' they're everly bran-fired mad at any white man that'll do such."



"You realize, of course, the cow didn't stop either."

"I'd not," Viney said with heat. "Even if one come atrailin' a wing up to my house, I'd think of the other a-mowerin' out there an' I'd get it back to water."

"You'd best get back to your own water an' the dishes," Ma Calloway called from the kitchen. "This is Saturday an' I'm bound to have your help to redd up the house."

Cam and Bucky got free of Ma about an hour after breakfast and struck out along the lake shore. The air was like golden wine. On the hardwood rises behind the cabin the frost fires were in full blaze. The hard maples glowed rose-red and in the thickets beneath, the antlers of the stag-horn sumac held sprays of deep blood red and old gold. Here and

there a towering white ash rose like a royal plume of purple. Down close to the ground ran streaks of dull garnet and bright buttercup yellow where the sassafras was turning. The squat spice-bush had turned to gamboge yellow. But richest of all in pigment were the occasional red oaks on the high ridges. They made the woods seem on fire.

As always, Cam was a different being in the woods. Days like this he became a boy again. He never took a dog on such hunts. Stalking and still-hunting were his way, and, besides, he detested rousing the countryside with the baying of hounds.

Bucky was high-fire, more alive than he had been for months. As they tramped, he told Cam what he had found out about the geese back in the marshes, and about his fight with Whit Turner. He had had to tell Ma the first night because of his bruises, but he'd wanted to wait and tell Cam when they were alone.

"You done right to foller your feelin's thataway," Cam said. "A chap's got to have the courage of his conversation, all times, an' all our line's always stuck up for the geese. Town thinks we're addled, root an' branch, so I've heard it told. But all that don't differ none to us. You'd best get fixed for more trouble one day soon though, Bucky. 'Twould be a heap diff'rent—him bringin' the fight to you."

"I can take care of myself," Bucky said. "I'm sorry I did it now. Must o' gone a mite daft, seein' that goose drop. I don't hone to feud with anybody."

"I know you don't, son, an' I'm right glad of it."

A startled quit, quit sound from the thickets a hundred yards ahead; then a muffled whir of wings. A covey of partridge roared across an open glade. Cam's gun leapt to his shoulder like light itself and clapping echoes fled away among the hills. A speckled bird peeled off from the flock and plummeted downward in the brush.

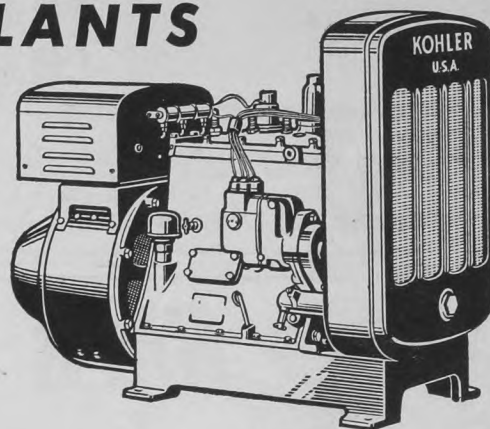
Bucky had been a breath too slow to aim and had held fire, following the inbred code of the region never to waste a shell, always to make a single shot do. From long practice father and son had developed a teamwork. They were like separate parts of the same machine. Their gun barrels followed automatically each flurry of birds. In the split second in which the partridge rocketed from sight, the decision was made as to who would shoot. A single word from the first to draw bead and the other held fire, unless it was a covey of more than half a dozen; then both would fire simultaneously.

They set off inland from the lake, moving single file, Cam in the lead. They moved with remarkable silence, for each had the still-hunter's privy foot and the rare woods-traveling mind. Hurry was forgotten. Cam was a millionaire where time was concerned.

In the next mile they brought down five more partridge. Then they entered a stretch of hardwoods with willow thickets running down to the stream banks. Here long lines of rabbits slipped silently away to all sides before them, each line led by a big old buck. Already snow-white in their winter coats, they could be seen for a hundred yards amid the winter brush. Even in their secret forms, they stood out now like nubbins of unmelted

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snow against the dry stems and dark brown earth.

They shot eight bucks before they quit the willow strip. Their meat was already firm and prime.

"Aye cod, them poor foolish do-bbers," Cam said. "They figger they'm safe in their hidey holes, same as in spring an' summer when all the leaves is helpin' 'em. They'm pure fooled by nature an' the season. I declare, it's cold-out murder, shootin' 'em. We'm a fair load o' meat now. We'd best take 'em up on the ridge yonder an' clean 'em after we eaten a bite. Rid ourselves of twenty-five-pound weight."

THEY sat down with their backs to an ancient beech and ate the bacon sandwiches and wedges of cornbread Ma had made up. Afterward they lay on their backs looking up between the leafless branches. Bucky was lonely-happy, with that bittersweet joy he knew only when he and Cam were alone. He stretched, sighed and groaned.

"Pity it can't be like this every day o' the world, Pa."

"It's a God's mercy it ain't, son," Cam chuckled. "Else there'd be nothing to set it off from the rest an' all would go stale, like beer with the cap off. The best part of ary thing, even love, is the plannin' an' lookin' toward it in the sorry times."

The southern migration was reaching its final height in these last days before snow flew. A few gaggles of wild geese still went over, flying high, with no thought of stopping short of the Great Lakes. Lower down, ducks of many kinds went hurtling down the sky. Only a thousand feet above the forest occasional bands of scap came down the wind in dark streamers. Families of blue-winged teal shot past wedges of slower-flying ducks. Once, as they watched, a company of canvasbacks came down the sky in a whizzing parallelogram, their long red heads and necks outstretched—grunting as they flew. These speed kings of the ducks moved at 130 miles an hour.

"What's them grey-black specks 'way up there with the sun ball glintin' on 'em?" Bucky said, pointing. "I took 'em for a cloud tatter first, but I make out their wings. There's two long strings of 'em."

"Them'll be widgeon an' tern, son. I can't rightly make 'em out, but I know by their speed. They come from clear up on the Arctic Sea. They got no truck for such as us an' our puny lake. They'll make no stop, 'cept maybe once on the big lakes, till they get to Mexico an' beyond. They'm the long-distance fliers o' the lot. The tern hold the cold-out record for far flyin' o' the whole mort o' winged critters. They start out from the Arctic Sea an' fly an' fly like they was addled, never stoppin' till they come to the South Pole Sea each year. They nest as far north an' as far south as they can find a morsel o' land. Takes 'em nigh six months goin' down an' six months comin' back, so even their courtin' an' matin' has to be done along the way. They be a fair match to you, I reckon, for traipsin' their days away an' wantin' to see all creation. Now see kin you tell me which is the speediest o' all the flyin' things."

"I'd name the ol' canvasback first," Bucky said.

"You'm wrong. It's the little ol' bat-bird that your ma's so 'feared of when

it's circlin' round of a summer night. A critter that ain't even a pure bird, but a pindlin' mouse-varmint with wings onto it. But in straightaway flyin' it'll leave ary bird behind like it was stuck in a bog-hole. It'll do better'n 200 mile an hour, so the books say."

Cam lit his pipe and began slitting the bellies of the rabbits open. Bucky followed suit. When the rabbits were cleaned they strung them together by their hind-leg tendons, the partridge with them.

"We'll hang 'em all on a high bough an' get 'em as we come back," Cam said.



"I went out with an eel last night. Wow! What a sensation!"

As he got to his feet he uttered a low groan and stood rubbing his hips and thighs with his two hands.

"Ain't the man I was," he muttered wryly. "Take me a week or two to curry the kinks out an' get back in shape, I reckon."

For a space his gaze was lost in the distant woods, a greyish look on his face.

ILLNESS and physical weakness were almost unknown in the Cal-loway household. A shadow fell over Bucky at Cam's words and the grey look that crossed his father's face, but he said nothing. Each took up his gun and for a time thereafter they gave over all talk and tramped silently, using their eyes and ears and every sense to analyze the new range they were entering.

The Little Jackpine Valley was one of those remote places, which still exist in the Northern wilds, where the wilderness in all its olden meanings had held out from the beginning against the inroads of man. Few hunters ever went there; even the Indians rarely visited the place. The valley had never been trapped in Cam's memory. Even he had never been to the valley's head, far up on old Sugarloaf Mountain.

The lower half of the valley was a jackpine forest, where the trees on the slopes grew thick as a crop of devil-grass. Farther up toward Sugarloaf, the pines gave way to spruce and the valley pitched downward in a series of rocky ramps. Down these, from somewhere in the mountain's heart, a small stream a rod and a half wide came rushing and plunging in many a miniature fall and boiling cataract—the Little Jackpine, which even in winter did not freeze along its headwaters.

Both Cam and Bucky could read the silent speech of places, and what the valley said seemed vaguely antagonistic. Animal signs were all dif-

ferent here; there were few birds and only occasional deer signs and the rabbits were wary. Twice they sighted a red fox.

The valley's length lay open, like a slot in the mountainside, to the fury of the northwest storms, and the stream bed had become choked with almost inaccessible jungles of down logs, brush, and windfalls. These weather-bleached masses of branches formed nightmare tangles that seemed caught in a permanent hysteria.

CAM cut careful trails around these, leaving blazes for future guidance. From the midst of these tangles tiny snow-white ermine reared to eye them cautiously.

"Fur sign better'n I seen in a scad o' years," Cam said. "There's a mint o' bounty in here for the takin', son. We'll start layin' our line out come first snow."

Cam paused, pointing to a grouse that had been killed, the skeleton left intact.

"Hawk," he said. "Wolf or lynx would have ate all an' cracked the bones. Mink would have tore the breast open."

A bit farther on the great splayed tracks of a lone moose came down to the stream bank and crossed the valley. The two stood looking at the trail. Cam's black eyes gleamed. A tingle went through Bucky at the size of the tracks.

"Them tracks is big enough for old Lophorn hisself, I do declare," Cam said.

Old Lophorn was known to every hunter. He was an anachronism, apparently the last of his kind left in that section, so named for the peculiar palmation of his left antler. A big bull of mature years, he was so woods-wise that he had survived season after season, in spite of the efforts of numerous hunters to bring him low. But there were not a few woodsmen in the country who were proud of the tall bull and saw in his exceptional size and prowess a promise for better hunting in years to come. Some of these, including Cam himself, had refrained from putting a ball into Lophorn when he came in fair range.



"I haven't touched a grasshopper since I heard they're harmful to crops."

The sheer joy of the trail had taken Bucky over now, and he was lonely-happy again. The weight of his light pack, the heft of his gun, were part of it.

Once they sighted a mink in prime winter coat. An otter with snaky neck arched in curiosity, paused fearlessly before lancing into the water.

"Not even a grain fearsome," Cam marveled. "Could 'a picked him off with the light gun. Oh it's a virgin range we come onto, Bucky."

"I disremember ever seein' such a mort o' critters, bird or varmint, as this year," Bucky said. "It's like they was all askin' to be kilt dead an' done with. What makes huntin' that way one year an' another so pindlin' an' scanty?"

"You'm hit on one o' the prime secrets o' nature there, son," Cam said. "We'm now in a ninth year o' fatness an' plenty. Nine years all the critters has been breedin' an' buildin' up to a peak o' plenty, till they'm a rabbit growin' on every bush. But then along comes the tenth year, the lean time—'The Year o' No Rabbits,' the Indians always call it. It's like nature'd turned pure sick o' their wastrelin' ways an' every tenth year set out to weed 'em down to root again. I reckon if'n she didn't take a hand like that, times, they'd breed like Talt Bingham an' his woman done on Hat Creek, with their seventeen married children. Breedin' an' begettin' till hell won't have it no more an' but for a higher hand humans themselves'd not find room left in the land. But nature she brings sickness an' a mort o' mishaps, an' plague worse than was writ in the Book, cuttin' down all tribes till they'm on the rag edge o' 'bliteration an' there's naught but a small handful left to carry on the line. Next year we'm due to see that, Bucky. We can hunt through that willow slash back yonder an' we'll find but a rabbit or two left an' them rickety an' ailin'. Every ten year, reg'lar as clock tick, the lean time comes. 'Twas a Micmac hunter first told me of that, 'way back when I was only tad-size. The Indians knowed about it from times long gone an' always prepared for it beforehand. In all my time in the woods I never seen it fail. So we got to make fur harvest this year, Bucky. Next winter it'll be scarce worth the work of layin' our traps."

BUCKY was silent. Minutes later he asked, after long mulling:

"Ain't there a critter in all the Lord's lot that nature ain't got it in for?"

"I was waitin' for you to ax that," Cam said. "They'm a small few. There's the wild goose for one, an' the quail. The reason there's that both has strict breedin' laws o' their own, laws a sight better'n must humans know. An' the deer ain't hardly affected by the die-off year neither. It's the rifle an' the cougar that thins out the deer folk."

Presently as they climbed up out of a gloomy ravine, an ancient, half-dead pine called their attention by its great size. It was a couple of centuries old and evidently the only remnant of its day left in the valley. Round about, rotting stumps showed how some long-ago fire had demolished its fellows in bygone days, long before the white man's coming. The bark was falling away in patches. Half the boughs were bare and dead. A great hollow at its base showed the inroad many a fire had made into its heart.

Cam knelt and peered up into the dark hollow bole.

"We'll plant us a trap or two in that hollow, come first snow, Pa," Bucky said.

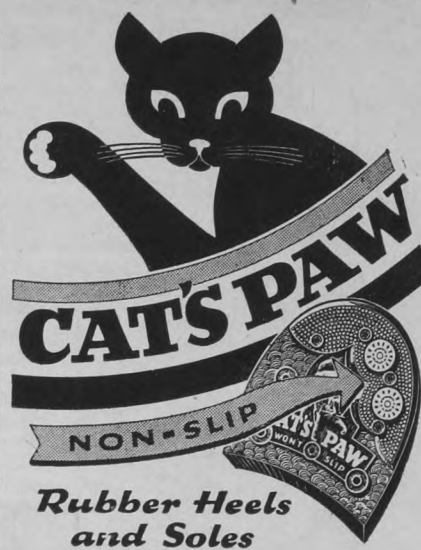
Cam shook his head.

"Bear tree," he said. "Best let it be.

Take a look at it again, come January. I mistrust we'll come onto a roomer here." He moved round the tree. "Look there, Bucky." He pointed. "That there's the blaze mark o' the last bear that slept here. A male bear'll always leave his mark, happen he finds a thing or a spot that purely suits his fancy. Many's the time I've seed one carvin' his 'nitals like on a tree. He'll stand up with his back again the trunk, a-naggin' an' a-mumblin' an' measurin' his length. Then he'll turn round an' reach high as he can to claw his sign for all comers to read. It's a cold-out location blank like a man'll put up on a gold strike, givin' his size an' smell an' the state of his spunk, an' it's only a bear with a whole lot longer reach that'd think o' tanglin' with him over his claim."

A HALF HOUR later they turned homeward. They had found what they had hoped for, and something else besides. It was just beginning to look late. It was strange walking in the shadows of the valley bottom. Streamers of wind-blown snow streaked out from Sugarloaf Peak and the sun made them burn like wild torches. A chill breeze came sucking down from the heights, whispering eerily of snow. A dozen times as they went down-trail Cam stopped abruptly to look behind him and to all sides. Bucky would stop in the same instant.

"Queer," Cam muttered. "A full hour past, I had a right smart feelin'.



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we're bein' watched an' follered. I still got it."

"I had it too, Pa. It's mighty fear-some back yonder, ain't it?"

"It ain't a bear." Cam evaded the question. "Maybe some young fool of a lynx cat, figgerin' he'd like to play with us. A lynx is a tomfool for follerin' humans, but mostly you'm able to catch him at it."

They watched and listened, and once Cam hurried back to the top of a rocky rise they had just quitted, but he saw nothing. He looked tired again and Bucky felt another worry pang.

They hastened now along the stream bank, not talking. The breeze sounded its ancient dirge in the tree-tops. The hiss of the stream made a hush that was more intense than clear silence. A muffled pocket of stillness.

"TODAY you fellers has got to think-stop these windows with rags or summat, 'fore you high-tail it to the woods again," announced Ma Calloway at breakfast next morning. "I declare, with the north wind sucking in all the cracks, the drafts have fair taken over the place and every corner in it. A few more days and I'd catch my death an' the sinus too, soul alone here, and with no time for such fixin's."

"I pure forgot them windows," Cam said ruefully. "And it apt to come full winter any day now. Fetch in that old felt from the shed house, Bucky, an' we'll batten things proper. Then maybe if we bank the foundation with earth an' manure, your ma'll roast us a bird or two for an early noon bite, 'fore we leave," he added mildly.

"I could eat two whole pa'tridge myself," Bucky said, "an' a dozen taters an' half a pie."

"Your talk's bigger'n your bite, like always," Ma said. "But if you're feelin' that way you can pluck me four-five birds, 'fore you start to work."

"Yes, we'm meat a-plenty now," said Cam.

Ma turned on him. "Meat now, but what about later? S'pose we might's well make it a picnic, now we got it, even if we take our belts in come mid-winter."

Ma acted put upon, but Bucky knew she was happy.

"We'm aimin' to skip all leanness this year," Cam said. "Bucky an' I has found us a mint mine o' fur range up on the Little Jackpine."

"It's the skeeriest, wildest place you ever seen, Ma," Bucky said, "an' the varmints ain't even afeared of men."

"I disremember ever seein' better fur sign," Cam said. "With even a grain o' luck we'm due to be buyin' any an' all our fancy thinks of an' trustin' some o' our money to the bank, come spring."

"My fancy outrun my intelleck five years gone now," Ma sniffed. "But a body can always hope. By tomorrow," she went on, "one or both of you's got to go to town for the mail an' more vittles. I'm purely out o' flour now, an' sugar an' 'lasses an' sal'ratus. An' it's high-time we had some real coffee in the house again. That store tea is a water-sprinkled thing, come winter, an' cocoa nor chic'ry was never meant for any human to drink."

"I'll bribe Nat Stemline out o' a fair bill o' goods," Cam promised. "I'll tell him all about them fur signs, too."

"Our bill don't run to much now," Ma said. "We went real lean through the fall. But even the Good Book says man can't live by bread alone. Nor neither can he by 'lasses an' meal, only just so long."

"We'll get you all the trimmin's," Cam promised. "The meat an' taters we got. Let's eat hearty, 'cause five days away an' we'll have deer meat to lay by. Figger we may as well have the chickens for table an' I may cure the two pigs, too, 'stead o' tryin' to carry 'em through the winter. We'll have our hands full with the traps."

"Some jerked venison an' a shoulder or two o' pork in the smokehouse an' things'll look natural again. Pity



is you can't cure that worthless bear cub, too."

"Now Ma, no!" wailed Viney and Bucky in unison.

"That do-less, no-count bear has et us out o' a pure carload o' food scraps through the spring an' summer, an' us contrivin' at best o' times. Furthermore, Cameron Calloway, he ain't a cub no more. He weighs more'n a man, a low-standing keg of a man, all cut down to belly an' appetite. An' not forgettin' deviltry. I'm afeard at times to go into my own yard when he's in a mind for huggin' an' wrasslin'."

"I figgered he'd be long gone to the woods by now, or I'd put a foot down at the start," Cam said. "Figgered he'd nat'rally hibernate, come cold weather, but he don't show a sign. Looks like nothin' but the matin' call'll take him back to his kind. Poor little dobber, figgers he was borned here, most like, an' we'em his parents. Now we'm addled up his life for him with tame ways we'm purely responsible for him, looks like."

"Meanwhile he'm apt to go clean wild an' kill some of us in our beds."

Bucky ran into the yard where Keg was mumbling over an old bone. Viney followed.

"Watch us, Ma. Keg ain't even a mite fearsome, even when he's wrasslin'. He knows a sight o' tricks, too. Lookit!"

BUCKY thrust an absurd dunce cap of paper on the cub's head and gave an order. Keg rose obediently on his hind legs and walked staggeringly round and round. His head was tilted ludicrously sidewise, his forepaws waved beseechingly in the air. Keg enjoyed the trick even more than the youngsters themselves.

Tiring of the game at last, Keg dropped and grappled lovingly with Bucky in a sort of football tackle, diligently searching his pockets for reward. Old Sounder rushed loyally in to join the scrimmage and Keg turned to

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engage him in a special sham battle. They rolled on the ground, bawling and barking blissfully.

Ever since he had been able to walk Keg had eaten and slept among the animals of the barnyard; he had played, fought and wrestled, learned to come when called, and taken chastisement on occasion, the same as the dog and the children, profiting by it all, particularly on the occasion which had earned him his name.

The Callows had returned home one day to find their pet bawling in the clearing, with his head stuck fast in a small honey keg. Thereafter the name Keg remained as a fixture and it fitted the youngster as well as his own hide.

For the next two hours work took over the family. Cam and Bucky weatherproofed every crack and banked up the foundation against coming snow. At the end of that time Ma called everyone for the noon meal.

In the past twenty-four hours, leanness had fled before plenty and the Callows foregathered each with a whole browned partridge on his plate. They fell to in silence.

Ma had no equal in the region in the preparation of wild game. She roasted her partridge slowly in two big Dutch ovens, tucking strips of bacon under the breast skin and stuffing the birds with onion and the tender, long-grained wild rice which Cam and Bucky garnered each summer from the marshland at the head of the lake. To Bucky, at least, partridge was the feast of all feasts.

BUCKY was too busy with his plateful to speak. Even Viney had laid aside her new, ladylike ways to eat with her fingers. Cam spoke over his pipe when the meal was finished.

"Bucky an' I'll make that little trip to town this afternoon. We can get us another mess o' birds along the way. We got to have more shells an' see about them new traps."

"Reminds me, I got an important letter for you to mail," Ma said, going to the cupboard above the stove. "Put a stamp onto this an' drop another one inside. It's for their big double-size winter catalogue. I guess likely it'll be owlright 'fore you fellers get back."



"Don't expect us till you see us," Cam said. "We might stop by Alf Simes' place, or Jeth Mellott's."

Bucky gave an exaggerated groan. "I purely hope Bridie won't be hangin' around there," he said.

"Bridie's—sweet on Bucky, an' Bucky's sweet on her!" chanted Viney, giggling.

Bucky's face went dull-red with vexation.

"You don't know a bee from a bull's foot," he cried. "That's just a lie-tale they made up at school."

"I take note Bridie don't haunt this place like she used to," Ma remarked.

"She can't trail me round the woods no more," Bucky said sullenly. "She'd make a feller the laugh-stock o' the town."

When he and Cam had been out on the trail a few minutes, Cam remarked casually: "What's this about you an' Bridie, son? Used to be you two was close as a pair o' wings, like. Always huntin' an' proggin' the woods together."

Bucky kicked at a big pine cone.

"I DON'T know. Used to be Bridie was good as any man," he said. "Knowed the woods an' critters good as I or you, almost. She'd hunt an' track all day. Then she turned uppity on me. Says she got no time for huntin'. Turned rabbity, too. Last summer, that was. Acted up like a pure fool, last time I stopped by her place. Had a ruffledy dress on an' was makin' herself a new face in front of me, with powder an' truck."

Cam shook with silent mirth.

"A girl-chap'll always turn finickin' after just so long," he said. "But all that's as the Lord intended, Bucky. Bridie's about turned 15 now; time to show her feathers an' trail her wing a bit. That always makes a feller feel he'm double-crossed an' lost all friends. I mind the time well. But a couple year later, when it comes his time to strut an' drum a log, he'm addled with her ways an' can't get enough o' foolishness. It's the like o' that draws kind to kind an' makes the world go round."

They took the long way to town and Bucky showed Cam the secret banding place of the geese. Cam lingered a long time at the marsh edge.

"Another year," he said as they turned away, "I'll like to plant me a patch of corn down here. Just to see what the geese'll do. Happen I can file a claim on this stretch o' timber I'd purely like to make it a stop-over place for the geese, where they'd be safe from men an' dogs an' have a mite o' feedin'. Only God's way I could do that would be to own the land."

"Let's do it, Pa," Bucky cried. "Once we owned the land an' got 'em to come we could get help to feed an' protect 'em. Even the government would help with such as that. They've got protected places for 'em down south. We read all about 'em in school. There's a good livin' in it, too, Pa, for the fellows that start the sanctuaries."

Cam shook his head.

"'Twould take a sight o' work, Bucky, an' a sight o' money. An' we'd need the town to back us, too. Swift-water'd never back any plan o' the Callows. And all the town wants is to shoot the wild birds. Look at old Hayes of the Lakeview Hotel. Promises goose huntin' in all his hotel ads. No, what we do here we got to do alone, son, like it's always been."

Bucky's gaze sought the ground and he kicked dejectedly at a leather-colored fungus. This was a plan that had been growing in his mind for a year; but he did not try to argue further.

TO BE CONTINUED.

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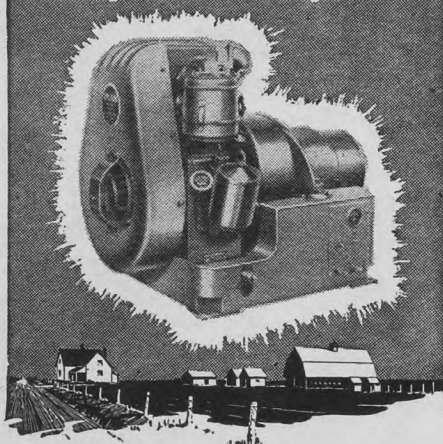
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Science and the Farm

Some ways by which the farm and the sciences interact upon each other

ANTIMYCIN A gives promise of being a good insect and mite killer. It is a mold chemical distantly related to streptomycin and only kills insects that eat it. It is also selective. It is reported that carpet beetles were stopped from eating fabrics treated with it, but German cockroaches were not affected. It was effective against the Mexican bean beetle larva, and is said to be about three or four times more effective against the red spider mite than the commercial anti-mite chemical D.M.C.

LAST year in the United States nine new plant diseases appeared, and 19 diseases occurred in states where they had not been found before. The hot, dry weather of mid-1949 tended to bring greater than normal losses from plant diseases. The new diseases included a new blight in Kentucky, which has already caused serious losses in Europe, a new leaf blight in Illinois broom corn, a new mold on clover, and a virus disease which attacks California clover.

IT is now possible to produce rubber from goldenrod that can be blended with Hevea, the plantation type of rubber, or with synthetic rubber. It was first produced during World War II by the Southern Regional Research Laboratory of the U.S. Bureau of Agricultural and Industrial Chemistry. Bicycle tires made from goldenrod rubber give three times the mileage given by standard wartime bicycle tires, and nearly twice as much as standard rubber tires of prewar make.

THE year 1950 has seen many different wars on insects in the United States. These cause many millions of dollars damage to crops every year. This year southern cotton growers battled billions of boll weevils; 35 aeroplanes day after day took part in an all-out war against the grasshopper to protect the grasslands of Wyoming; the army worm was attacked in Maryland, Delaware, New Jersey, Pennsylvania, Virginia, Ohio, Oklahoma, Texas and California. Moderate to heavy damage across the nation was reported as having been caused by the grasshopper, European corn borer, corn earworm, army worm, alfalfa weevil, red mite, Mexican bean beetle, potato leafhopper, seed-corn maggot, Colorado potato beetle, potato flea beetle, cutworm, tobacco hornworm, boll weevil, cottonleaf worm, cotton thrip and the screwworm.

ONE major U.S. meat packing company maintains laboratories containing 250 research workers, and in addition has made grants to colleges for agricultural research amounting to over \$2 million. The reason is that packing plants get 10 to 15 per cent of their revenue from by-products derived from the blood, bone, hide and hair of animals.

New synthetic materials tend to cut down the market for livestock by-products. Packers have, therefore, developed a lard that keeps without refrigeration, meats for babies, frank-

furters with skins made tender by enzymes obtained from pineapple juice, and other products. Among these is ACTH, short for a hormone named adrenocorticotrophic, which is secured from the pituitary glands of hogs. This new drug will help to relieve arthritis and may be useful in the treatment of rheumatic fever and other serious diseases.

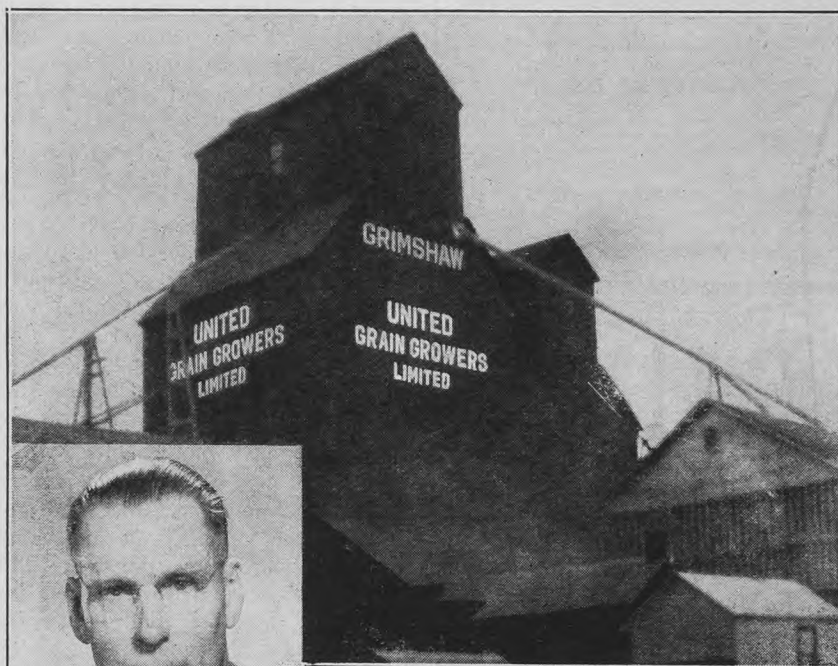
Curiously enough, one group of meat researchers is looking for a method of making creamier ice cream by using less cream and perfecting a better gelatin, made from pig skins. Another group is trying to develop a new plastic out of hoofs, horns and animal hair.

ENGINEERING science has produced a combination tractor, truck and passenger car for use on small farms not large enough to warrant both tractor and passenger car. This weighs 1,100 pounds, has a wheelbase of 63 inches, is 45 inches high with the windshield down, and will sell for about \$800 at its Marion,

Indiana, factory. It has power enough, from a 26.5 horsepower engine, to pull a 10-inch plow through tough soil, and has a special gear system with six speeds forward and two in reverse. It will travel up to 60 miles an hour on the highway. Standard equipment includes a two-passenger main body to which an easily attachable pick-up body can be added for additional passengers or cargo. On the farm it will pull a trailer-wagon, cultivate, saw wood, spray crops, or plow.

THE reason you can't kill a housefly by slapping your hand where it was, is that it is too fast on the take-off. By the use of a high-speed camera, capable of taking 2,400 pictures per second, it has been determined that the wings of a fly beat 212 strokes per second.

AVERY serious virus disease of fruit trees, known only as Western X disease, injures peach and cherry trees along the Pacific coast. It has now been discovered that a greenish-yellow leafhopper about one-fifth of an inch long is the villain which carries the virus from tree to tree.



Inset is Walter Johnson, agent at the U.G.G. elevator, Grimshaw, Alta., shown above.

Record Elevator Handling

THIS elevator at Grimshaw, 17 miles west of Peace River town in the Peace River district of Alberta, last year handled 659,836 bushels of grain. It is a record for the company in any single house over its 43-year history.

In the early years of grain growing in western Canada, when shipping points were few and far between, grain had to be hauled much greater distances than are common today, and handlings of individual elevators were often quite large. It is believed that the all-time record for any company may be somewhat larger than the 1949-50 handling by the United Grain Growers Ltd. at Grimshaw.

Grimshaw is a strategic point for grain deliveries. Walter Johnson, U.G.G. agent at Grimshaw (450 miles northwest of Edmonton), is located at the junction of the new McKenzie Highway which runs to Hay River, 399 miles north, and his elevator serves the Yellowknife area on Great Slave Lake. He recalls that the last three loads of grain delivered late in July were trucked from a point 40 miles north of Fort Vermilion, a distance of 280 miles from Grimshaw. Some of the loads trucked these distances are exceptional: One single load of oats carried on a semi-trailer weighed the equivalent of over 800 bushels, while wheat loads frequently exceed 500 bushels. For these extreme distances farmers have paid as high as 60 cents per bushel to get their grain transported to the elevator. The new McKenzie Highway, while generally good, is poorly served by roads. One farmer, hauling to Grimshaw and having 300 acres in crop, is located 40 miles from the nearest graded road.

Agent Walter Johnson and his assistant, Ed Johnston, are to be congratulated on this record handling for their company.

The Country Boy and Girl

The Vinegar Jug

by MARY E. GRANNAN

THE kitchen door banged loudly, and Ricky almost tumbled into the room, in excitement. "Mum, Mum," he called, "Mum, do you know something? The circus is in town, Mum, and it's a circus with big tents, and there are clowns and lions and tigers and ponies and elephants. It's the biggest circus in the world, and it's going to be in the ball park. I saw the circus trucks, and I just came in to tell you the circus was in town." Ricky stopped for breath.

"I know the circus is in town, Ricky," said Mrs. Allen.

"You knew it, Mum," gasped Ricky, "and you didn't tell me? But Mum, you know I love circuses best of anything in the world."

"I know that too, dear," said Ricky's mother. "I didn't tell you because I knew you'd be so disappointed when you found out that you were not going to see it. Ricky, we can't get tickets. They are all sold. Your father left getting them until it was too late. He was so busy. You understand, don't you, Ricky?"

Ricky bit his lip and nodded. But he found it hard to believe that he was not going to see the circus. To take his mind from his disappointment, his mother asked him to go to the store on an errand.

"I'm making pickles, Ricky, and I need some vinegar. Take this pitcher," she said, "and ask Mr. Smith to fill it for me."

"Yes, Mum," said Ricky, dully.

"It's a big pitcher," said Mrs. Allen. "Do you think you can manage it?"

"Yes," said Ricky. "I'm as strong as a lion." His lip quivered. The word "lion" had made him think of the circus all over again. He ran out of the kitchen and down to the store. The grocer smiled as he came into the store. He knew Ricky well, and liked him.

"Vinegar, eh?" he said when he saw the big stone pitcher.

"Yes, sir," said Ricky, "Mum said to fill it to the brim." Ricky sighed unhappily. The grocer looked at him in amazement. This was not like Ricky.

"What's the matter, Ricky, aren't you feeling well?"

"Yes, sir. That is, sir, I was until a little while ago," said the little boy. And then it was told. The grocer felt very sorry for Ricky.

"That is too bad," he said, "but I'll tell you what you can do, Ricky. My delivery boy is going over to the circus grounds now, with a load of groceries for the cook house. You can go along with him, and while he's unloading, you can have a look around at the animals."

Ricky brightened. "Oh, thank you, sir," he said. "But I'd better take the vinegar along with me. I can drop off the truck at our house on the way back."

Ricky held the vinegar jug carefully on his knees as the truck rolled toward and into the ball field. The ball field was like another world now. Men were shouting to each other, as they made ready the king pole to raise



Look for treasures out in the woods, colored leaves to press and make into a collection, pine cones to make decorations for Christmas and gifts for friends, rose hips for necklaces, and acorns to make little toy dishes.

September days are full of heat, They ripen fruit for us to eat.

SEPTEMBER means back to school with shiny faces, clean clothes and soon a set of new school books. We generally think of making resolutions at the beginning of a new year but the beginning of a new school term

is an especially good time for boys and girls to set some new rules for themselves. Can you keep those precious new books clean by making brown paper covers for them and by handling them carefully so that you will always enjoy using your books? Sometimes, like Dagwood, you may have to make a "flying start" in the morning because you have turned over for just a few winks more after Mother called you. But you can still arrive at school on time looking fresh and clean if you lay out your clothes all ready the night before. Try this idea, boys and girls, and you will find you will begin each new day feeling fresh and ready.

Ann Sankey

the big tent. Ricky could hear the roars and growls of the animals coming from the animal stalls. He was still carrying his jug of vinegar carefully as he climbed down from the truck and made his way to the tent marked ANIMAL QUARTERS.

He saw stall upon stall of ponies. A friendly man who was scrubbing a giant elephant said good morning to him. Ricky stopped to watch the great grey fellow getting his bath, and then moved on toward the cage of the monkeys. He was laughing merrily at their antics, when a little girl came along. "Do you like the monkeys?" she asked.

"Oh yes," said Ricky. "I like all the animals, but the monkeys are so comical, aren't they?"

"Yes, they are comical," agreed the little girl. "My father owns them. He is Pedro Vansini. I am Tina Vansini. I am learning to ride the ponies. I am going to be a bare back rider when I grow up."

"I wish I could belong to a circus," said Ricky. "But I cannot even see the show. My father could not get any tickets. They were all sold. But I am lucky today. I came here with the grocery boy."

Tina was about to tell him she was sorry about the tickets, when she was interrupted by a loud cry from behind them. "Run, run for your lives!" came the voice. "Leo has escaped!"

Ricky and Tina stood in their tracks because at that moment, Leo, the Lion came toward them. Ricky, almost without thinking, raised his pitcher of vinegar and flung it full in the lion's face. He gave an unearthly shriek and fell to the ground rolling over and over in pain.

The vinegar had caught him squarely in the eyes. It did not take his keeper long to slip chains over him. In a few minutes Leo was again in captivity.

Crowds gathered about Ricky to praise him for his clever action. Pedro Vansini said, "You saved my little Tina's life. What can I do for you, Ricky?"

"Give him tickets for the circus, Papa," said Tina. "That is what he wants most of anything in the world."

That night, Ricky and his father and mother sat in ringside seats. The next day a box was delivered to Ricky's home. Inside it was a saucy little monkey wearing a green jacket and cap.

"He is from Tina," cried Ricky in delight. "I shall call him Vinegar."

Drawing Leaves

Part I of series

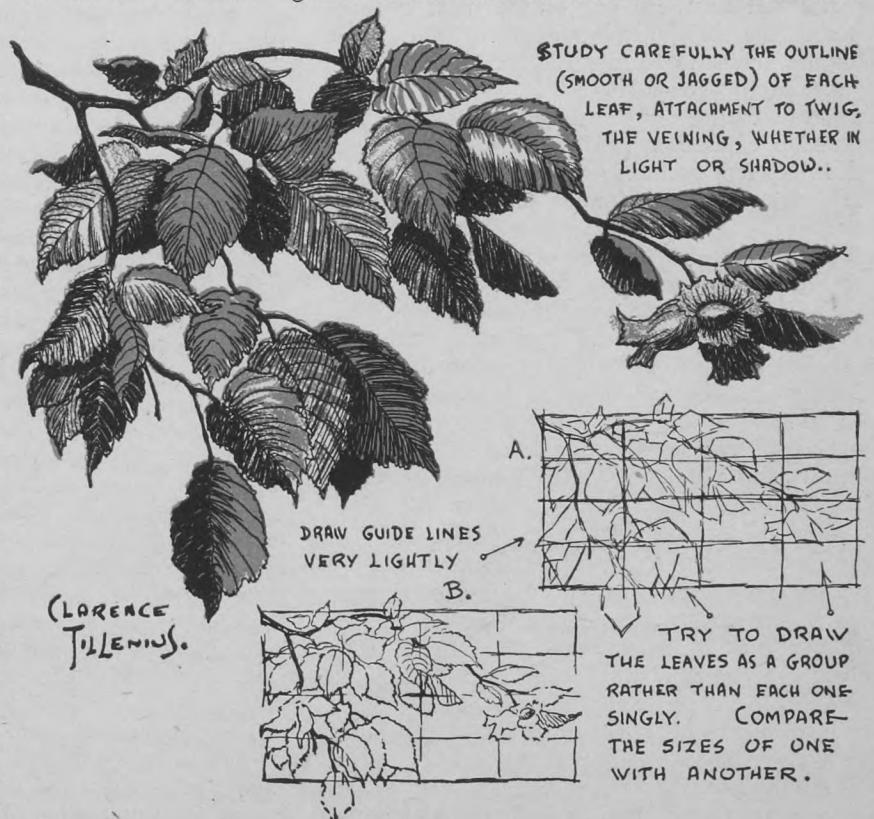
by CLARENCE TILLENUS

AUTUMN! This is the season of color, and the splendor of the autumn leaves cannot fail to delight the artist. Here the blazing crimson of maple and sumac, there the ivory and gold of birch and aspen showing in brilliant contrast against brown

oaks and dark evergreens, or perhaps a flaming mountain ash silhouetted against the lavender sky and mirrored in the dark blue lake beneath. Not only the landscape but each autumn leaf itself is a harmony of color.

Yet the color is fleeting—soon chill winds and frosts will have stripped the trees and left them bare. If you like to draw, you can capture some of this autumn glory. Look at the illustration below. It is a simple sketch, in two colors, of a twig from a hazel bush. Though it may look complicated, it is simpler than you think. First pick a branch and hang it up beside your drawing table. It is better to draw indoors at first, till you get the hang of it—later you can carry your sketchbook and color box about with you and make your sketches on the spot.

First, put down very lightly (with pencil) the main lines of the twig itself as in (A). Never mind the leaves at first. Now, imagine a rectangle roughly enclosing the mass of leaves. Estimate the middle points and subdivide again. This will help you get the various divisions of the branch and the grouping of the leaves correctly placed. When the general proportions seem correct, begin carefully to work up the drawing (B), working slowly and constantly comparing your sketch with the branch before you. Observe carefully the outline of each leaf, how it is fastened to the branch, the veining, etc. When you are satisfied with the outline, take up your colors. Look at the largest leaf and judge what the tints are; then quickly paint in the colors and let them run into each other while wet. Work boldly and do not worry if you spoil a drawing or two. You are bound to spoil many before you satisfy yourself, and that is the way it should be. No good thing comes without effort. But if you keep on, you will have many a satisfying sketch to enjoy when the brilliant leaves lie hidden under the November snows.



THE *Country* GUIDE

with which is incorporated

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The Rail Strike

The rail strike is ended. The wheels are turning again while negotiations are being resumed, this time under the threat of compulsory arbitration in case of failure. Without knowing the outcome there are two views which may be pertinently expressed.

There is, of course, one easy solution which could be put into effect today by parliament, or later by an arbitrator. That would be to concede union demands entirely, or substantially, and depend on the authorization of fresh rate increases to cover the increased wage bill. There appears to be an impression among labor ranks that the demands of the strikers could be met without a rate increase. This does not seem to tally with the judgment of the able conciliation board which reported last April. However that may be, any solution which satisfies union demands at the expense of shippers of freight will provoke loud and instant condemnation from the farmers of Canada, the one class which cannot pass its increased costs along to the consumer.

It is to be expected that parliament will probably follow the line of least resistance by effecting a settlement of the present dispute without tackling the larger issue — the right of a single group to throw the whole national economy out of gear to enforce its own selfish ends. At the time of the 17c wage demand in 1948, the federal government, fearful of the consequences of a national rail strike, ordered the roads to capitulate and authorized a rate increase to compensate them. The ink of that settlement was hardly dry before labor began formulating the demands which brought about the present deadlock. Will appeasement today lead to another ultimatum next year? Can any economic group be allowed to exploit a favorable strategic position to press its own demands with reckless disregard of the consequences to the rest of the community? This is the question which parliament must ultimately answer, and in this dilemma it must speak fearlessly as the mouthpiece of the whole people.

No responsible person will advocate that parliament interfere, except under tremendous provocation, with the right to strike. It is a weapon which has brought the workingman many well deserved victories. It has been one of the most decisive forces in the social revolution of our time. Yet there are limits to its use, as British labor discovered in the general strike of 1926. It cannot succeed in the face of hostile public opinion. The grain crop of Canada is ripening for the harvest with insufficient fuel at local points to bring it in. One industrial concern after another has been forced to shut its doors because of the interruption of transportation. In the face of this situation, one of the best paid groups of workers in Canada, which contains underpaid and overpaid sub-groups, continues its demands, not for a levelling up within its own ranks, but for a horizontal increase for the whole group. The end result of a long strike on such grounds would be to precipitate a quarrel between the rail workers and other trade unions for provoking a situation which would threaten to blunt the edge of their trusty weapon.

Manitoba Flood Settlement

Surely no more exacting job has ever been imposed on private citizens than service on the Manitoba Flood Relief Fund committee. The eminent gentlemen who compose this body, serving without remuneration, are charged with the distribution of over \$8 million voluntarily donated by Canadians from coast to coast. It is their responsibility to sort out the valid claims, and to give first consideration to the most deserving. We believe that up to date they have shown good

discretion. It would be a divinely inspired achievement to allocate the whole sum at their disposal without having disappointed anyone. Nevertheless in the completion of their task certain suggestions have been put forward on which the fund administrators have not spoken at time of writing, but which we believe will have general public support.

The aim of the relief fund was to reimburse flood victims in some degree for the loss of certain categories of private property, the two governments having undertaken restitution of real property. The fine response to the nation-wide appeal made it apparent, as the checking of claims proceeded, that there would be a surplus out of which re-establishment of small businesses could be undertaken. When this praiseworthy aim was accepted by the fund committee, a query was immediately raised about specialist farmers who are in essentially the same position as small business men—poultry farmers, market gardeners and fur farmers. About 400 men in this classification have suffered damaging losses. Subsequently the claims of about 1,000 grain farmers have been put forward whose losses far exceed what they may reasonably expect from government funds in respect to real property, or relief funds in respect to personal property.

On many of these farms the water receded so late in the season that no crop could be sown, and these men are therefore bereft of the main item in the year's income. It may be possible to make partial payments for crop loss from P.F.A.A., a point not yet decided. Even if P.F.A.A. money becomes available these grain farmers have had losses which may be classified as damage to the means of production, and for which there is no reimbursement now in sight.

Farm leaders advance the view that the claims filed on behalf of this relatively small group of farmers are deserving of special consideration alongside the losses suffered by small business men. Without a doubt the contributors to the fund had no distinction in mind between farmers and urbanites, and would support the administrators of the fund in adopting a very sympathetic attitude to these farm claims.

The Stockholm Peace Petition

The New York Times declares that 300,000 Canadians have signed the Stockholm Peace Petition, and Toronto Saturday Night adds the further information that this document has been circulated with surprising success among the mayors and councillors of the smaller Quebec villages, where the Communists were bright enough to have it printed in French and date lined from Montreal. That, combined with the fact that it purports to be in favor of peace, was all that was required to get good Canadian signatures. This petition has been presented in western cities and may get further circulation so that a word as to its origin and purpose will not be amiss.

The Stockholm Petition traces its birth back to a meeting styled "The World Congress of Intellectuals" held at Wroclaw, Poland, in 1948. It was nothing of the kind. It was more in the nature of a jamboree of long-haired Commies. Subsequent meetings of a similar nature were held at New York and Paris, and finally in Stockholm. At the final meeting, the idea of a world petition to stop atomic warfare came to full fruition.

The petition makes no mention of other agencies for the conduct of war. It completely overlooks the fact that for the first four years after the fall of Hitler the atom bomb was the democracies' one protection against the vast armies of Russia and her satellites. In effect the Stockholm petition seeks to disarm the western world and leave it naked before the mobilized might of the Reds. The disguise is too thin to fool those who will stop and think, but many well-meaning people, who genuinely desire peace, have signed in good faith, quite unaware that they were lending themselves to Red propaganda.

The Communists claim that 273,000,000 people, one-eighth of the world's population, have signed. Eighty per cent of the signatories, to be sure, are behind the Iron Curtain. Even in the United States 1,350,000 have been induced to sign, a number

well above the known Communists in the country, indicating the appeal this petition has for idealists whose aims are above suspicion.

Municipal Finance

While dominion-provincial relations are being overhauled at Ottawa, the public will approve of efforts made in Saskatchewan to deal with another aspect of public finance, the relations between the provinces and local government. The position of the municipalities becomes worse as time goes on. Rising costs, particularly with regard to education, demands a continually rising income, but their sources of revenue are severely limited, with the result that land taxes have risen to disconcerting levels.

A strong committee appointed by the Saskatchewan government has reported to the minister of municipal affairs in that province after a careful survey of the whole position. Some of the highlights of that report are taxation of crown companies, giving up the public revenue tax in favor of the municipalities, increased taxes on gas and on public service vehicles, and increased provincial grants to the municipalities for sanatoria patients. While controversy will arise on some of these points, others will doubtless find their way speedily into legislation.

One bone of contention will be the proposal to place a small tax on farm fuels collected by the province for the municipalities. Such a tax, yielding from \$800,000 to \$1,000,000, "could provide a basis for a sound improvement program for local roads." It may be objected that such a tax would fall with undue weight on large mechanized farms, and may be burdensome in poor crop years. On the other hand, over a large part of the province a tax of that nature would not have been seriously felt over the last decade, and had it been in force, the situation in that province with respect to local roads would be vastly better than it is today.

Another section of the report calls for an increase in license fees for public service trucks "which derive the largest benefit from a paving program, as well as contributing most to wear and tear on the highways." Presumably increased revenues from this source would remain in the provincial treasury, yet it is common knowledge that some of the most serious damage done by P.S.V. units is on secondary roads maintained by the municipalities.

In several places the Saskatchewan commission stresses the need for federal assistance according to the recommendations of the Sirois report, and urges that the implementation of that report should be pressed by all concerned. The public seems to have lost sight of the fact that when the provinces vacated certain tax fields in favor of the central government, one of the inducements was a social welfare program to be paid for by Ottawa, which has not yet come into full flower. It would lighten the load of the municipalities to a considerable extent.

Fire Insurance

The annual report of the Manitoba superintendent of insurance has just come off the press and includes some figures with respect to fire insurance worth passing notice.

The ratio between premiums and losses has dropped to 38 per cent for 1949, which is satisfactory after three years in which losses were over 50 per cent of premiums. Under the present cost of writing new business, fire companies can maintain present rates with a ratio of about 45 per cent.

Fire insurance in force within this province has nearly doubled since the close of the war. This is due to several causes, chief among which are the volume of new construction, and higher valuations on old properties. Notwithstanding the increase of insurance in force, it is undoubtedly true that most older residential properties are under-insured. Claims are not paid entirely on first cost less depreciation, as many suppose, but on well maintained properties some consideration is given to replacement costs. Home owners who have occupied the same premises throughout a period of advancing values are often unaware that the enhanced value of their premises warrants increasing the insurance in force.



Marboleum Patterns illustrated above: Ground, green M/99, Breakfast Nook inlays, M/92 and kitchen inlays, M/12, splash area back of sink, M/39. Domolite plastic curtains in breakfast nook pattern 1449 and in kitchen pattern 1442.

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